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PROGRAM OF STUDIES FOR JUNIOR HIGH SCHOOLS

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PROGRAM OF STUDIES

FOR

JUNIOR HIGH SCHOOLS

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INTRODUCTION

This Program of Studies contains an outline content of each course in the Junior High School together with a list of the recommended texts and approved secondary references. Regulations with respect to the credit value of courses, examinations and other matters relating to the operation of the high school appear in the current issue of the *Junior-Senior High School Handbook.*

Teachers who want suggestions concerning methods of handling a given course will find them in the related curriculum guide which may be obtained through the office of their superintendent or purchased from the Printing and Stationery Branch, Department of Education.

The assistance of committees in preparing the outlines in the various subjects is gratefully acknowledged.

ACKNOWLEDGEMENT

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GOALS OF BASIC EDUCATION*

In a world characterized by rapid change, yet counterbalanced by stabilizing influences, education must provide opportunities for students to meet individual and societal needs. This statement of goals is intended to give direction to the development of educational programs for Grades I - XII which will assist in meeting that dual set of needs.

Status of Goals Statement

As the variety among individuals and societies is broad, no attempt is made to place the goals in any order of importance. Such priorities might more appropriately be made at system or school levels. Despite the absence of stated priorities, none of the goals are to be deleted but complementary goals may be added.

In this regard goals concerning the relationship of people to a deity will have special significance for certain populations. Other goal areas may be of prime interest to other groups. Nevertheless the goals which follow, combined with such complementary goals as may be deemed necessary, form the basis for directing the educational endeavours of schools and school systems.

Finally, subsections under each goal are not meant to be inclusive but indicative of the intent of the goal.

1. Learn to be a good citizen.
   a. Develop an awareness of civic rights and responsibilities.
   b. Develop an understanding of the Canadian and other forms of government.
   c. Develop a feeling of cultural identity and heritage at national and international levels.
   d. Develop an attitude of respect for public and private property.
   e. Develop an understanding of the obligation and responsibilities of Canadian and world citizenship.

2. Learn about and try to understand the changes that take place in the world.
   a. Develop ability to adjust to the changing demands of Canadian society.
   b. Develop an awareness of and the ability to adjust to a changing social and physical environment.

*Excerpt from 1975 Interim Edition of *Goals of Basic Education, Grades 1 - 12*, as prepared by the Department of Education.

c. Develop understanding of the past, identity with the present and the ability to meet the future.

3. Develop skills in communication (listening, speaking, reading, writing, viewing).
   a. Develop skill in understanding the communication of others.
   b. Develop ability in communicating ideas and feelings effectively.
   c. Develop skill in oral and written languages.

4. Learn how to organize, analyze and use information in a critical and objective manner.
   a. Develop ability to organize information into meaningful categories.
   b. Develop ability to apply scientific methods in the pursuit of and analysis of knowledge.
   c. Develop skills of thinking and proceeding logically.

5. Learn to respect and to get along with people of varying beliefs and life styles.
   a. Develop appreciation and respect for the worth and dignity of individuals.
   b. Develop an understanding of functions, responsibilities and achievements of various societal institutions.
   c. Learn to take into account the values of others when making personal choices.

6. Learn about the world of work.
   a. Develop a feeling of pride in achievement and progress.
   b. Develop the ability to use information and counselling services related to career decisions.
   c. Develop skills basic to the world of work.

7. Develop management skills.
   a. Develop an understanding of economic principles and responsibilities.
   b. Develop skills in managing natural, financial and human resources.

8. Develop a desire for learning.
   a. Develop intellectual curiosity and eagerness for lifelong learning.
   b. Develop a positive attitude toward learning.

9. Learn how to use leisure time.
   a. Develop interests which will lead to a wise and satisfying use of leisure time.

b. Develop a positive attitude toward participation in a range of leisure time activities—physical, intellectual and creative.

10. Practice and understand the ideas of health, fitness and safety.
    a. Develop an understanding of good physical and mental health practices.
    b. Establish a good physical fitness program.
    c. Establish sound personal health habits.
11. Appreciate culture and beauty in the world.
    a. Develop creative self-expression through various media including the fine and practical arts.
    b. Develop special talents in the arts.
    c. Cultivate appreciation for beauty in various forms.
12. Develop basic and special knowledge competencies.
    a. Develop understanding and skills in the use of numbers, natural sciences, mathematics and social sciences.
    b. Develop a fund of information and concepts.
    c. Develop special interests and abilities.

CORE SUBJECTS

LANGUAGE ARTS

Objectives

To develop the ability to communicate with increasing maturity, logic and clarity in speech, writing, and in closely associated expressive arts.

To develop the ability to listen, view, speak, read and write with insight, discrimination and imagination for the end result of personal satisfaction and enjoyment.

To examine a variety of expressed thought with a view to understanding and responding to mankind's values, customs and traits, and consequently, developing a value system with which to make decisions and to live.

To encourage an appreciation of the impact of changes in style, media, and social influences upon the developing English language.

Note: For an expansion of the foregoing objectives and identification of related skills, refer to the *Secondary Language Arts Handbook.*

LANGUAGE

Program Outline

Grade VII — 1. Writing Skills
- a. Single and multiple paragraph composition and reports
- b. Summaries and note-taking
- c. Friendly letters
- d. Spelling
- e. Vocabulary development
- f. Handwriting
- g. Punctuation

2. Speaking and Listening Skills
3. Reading Skills
4. Grammar

Grade VIII— 1. Writing Skills
- a. Single paragraphs with stress on expository, descriptive, and narrative writing
- b. Reports
- c. Outlines
- d. Social and courtesy letters
- e. Spelling
- f. Vocabulary development
- g. Handwriting
- h. Punctuation

2. Speaking and Listening Skills
3. Reading Skills
4. Grammar

Grade IX — 1. Writing Skills
   a. Single and multiparagraph reports, compositions, short stories, speeches, etc.
   b. Summaries and outlines
   c. Business Letters
   d. Spelling
   e. Vocabulary development
   f. Handwriting
   g. Punctuation
2. Speaking and Listening Skills
3. Reading Skills
4. Grammar

Recommended Text Books

Grade VII — *Just English I:* Chorny et al
Patterns for Writing I: Dashwood-Jones
and one of:
MacMillan Spelling Series, Book 7
Basic Goals in Spelling, Grade VII

Grade VIII— *Just English 2:* Chorny et al
Patterns for Writing 2: Dashwood-Jones
and one of:
MacMillan Spelling Series, Book 8
Basic Goals in Spelling, Grade VIII

Grade IX — *Just English 3:* Chorny et al
Patterns for Writing 3: Dashwood-Jones

LITERATURE

GRADE VII LITERATURE

Course Content

I. *Literary Forms and Versification*

Although Grade VII students should have an understanding of conventional forms of poetry such as narrative and lyric, emphasis on the details of such forms is to be avoided.

In the structure of poetry a sense of rhythm and the ability to identify the iambic pattern are considered to be sufficient. Only such figures of speech as the simile, the metaphor, and alliteration should be identified and understood by the Grade VII student.

The study of prose forms should be limited to the identification of folk tales, myths, legends, fables, and short stories without analysis of their characteristics.

II. *The Novel* (highly recommended)

Rationale

The junior high school student is a sensitive human being. Impressionable and emotional, he is at an age where events affect him deeply. Media subject him to a variety of adult experiences, with stimuli so varied and confusing as to leave him bewildered, and often falsely oriented as to the meaningful goals of life in our society. As a result, life, to many adolescents, is either too difficult or too simple, and in either case it is not real, but a distorted shadow of reality.

The novel, especially one which deals with the contemporary adolescent culture, is important in illuminating the present for young people, linking it with one of the basic motivations for reading in adolescence; the search for identity. At the junior high school level, a student's personal experiences are limited. Yet it is what he does and suffers and feels that molds his personality and in part determines his life-style. The novel offers a student a variety of experiences which he may never actually encompass personally. Through identification with the characters in a novel, he can bring into clearer focus his self-image, maintaining at the same time a detachment which allows him to take an objective view rarely possible in real life until long after events have taken place. Thus the novel provides many students with a chance "to try on" different roles which may help them to clarify their own.

Besides providing young people with significant developmental experiences, the study of the novel serves to broaden their literary education, resulting in a rewarding, lifetime habit of reading.

Today, many junior high school students have the opportunity of reading more than they ever will again; they need a formal introduction to the novel and guidance in learning how to appreciate it.

Objectives

The main objectives in studying the novel at the junior high level are to provide students with opportunity for:

a. enjoyment
b. self-identification
c. literary appreciation

See the *Secondary Language Arts Handbook*, Section D, "The Novel in the Junior High School" for annotated lists.

III. *Creative Writing*

Creative writing should be fostered in accordance with the interests and talents of the pupils.

Recommended Texts

Safaris I by Coutts and Chalmers
Poems for Boys and Girls by Morgan and Routley
Plays as Experience by Zachar
The Novel (Optional)—See Section D of the *Secondary Language Arts Handbook*.

Available from book outlets or by special order from the School Book Branch.

GRADE VIII LITERATURE

Course Content

I. *Literary Forms and Versification*

In general, the study of literature in Grade VIII should approximate that suggested for Grade VII, but it is expected that a higher level of understanding and knowledge will be achieved.

In the study of the structure of poetry, for example, the teacher should plan to extend the student's knowledge of poetic forms and terms so that he will be assured of a wide experience with the types of material suggested for Junior High School.

II. *The Novel* (highly recommended)

Refer to Grade VII Literature section for the rationale.
See the *Secondary Language Arts Handbook*, Section D, "The Novel in the Junior High School" for annotated lists.

III. *Creative Writing.*

Creative writing should be fostered in accordance with the interests and talents of the student.

Recommended Texts

Safaris II by Chalmers & Coutts
Poems for Boys and Girls by Morgan and Routley
Plays as Experience by Zachar

The Novel (Optional)—See Section D of the *Secondary Language Arts Handbook.*

Available from book outlets or by special order from the School Book Branch.

GRADE IX LITERATURE

Course Content

I. *Literary Forms and Versification*
By the end of Grade IX, a student should have a reasonable understanding of the following:

A. Poetry
1. Types
a. Narrative
i. Ballad
ii. Epic
b. Lyic
i. Sonnet
ii. Elegy
iii. Ode
iv. Haiku
v. Limerick
2. Stanza Forms
a. Couplet
b. Quatrain
c. Sestet
d. Octave
3. Figures of Speech
a. Simile
b. Metaphor
c. Personification
d. Hyperbole
4. Versification
a. Meter
i. Types of metrical feet
Iambic
Trochaic
ii. Length of lines
Monometer
Dimeter
Trimeter
Tetrameter
Pentameter
Hexameter
Heptameter
b. Rhyme
i. Internal, end
ii. Masculine, feminine
iii. Blank verse, free verse

B. Prose
   1. Types
      a. Novel
      b. Short story
      c. Biography
      d. Essay
      e. Drama

The teacher is reminded that the treatment of literary forms and versification is not to be taught in isolation but in context during the general instruction.

II. *The Novel* (compulsory)
Refer to the Grade VII Literature section for the rationale.
See the *Secondary Language Arts Handbook*, Section D "The Novel in the Junior High School" for annotated lists.

III. *Creative Writing*
Creative writing should be fostered in accordance with the interests and talents of the pupils.

Recommended Texts

Safaris III by Chalmers and Coutts
Poems for Boys and Girls III by Morgan and Routley
Plays as Experience by Zachar
The Novel—See Section D of the *Secondary Language Arts Handbook.*

Available from book outlets or by special order from the School Book Branch.

READING

Refer to the *Secondary Reading Handbook* [*1969*] for assistance in developmental and corrective reading at the Junior High School level.

SOCIAL STUDIES

Rationale

Alberta's social studies curriculum (Grades I-XII) is premised on the assumption that schools must help students in their quest for a clear, consistent, and defensible system of values. Two inter-related implications of this assumption for social studies instruction stand out: firstly, students must be enabled to explore and assess the nature of values that influence their personal and social lives; secondly, students must be assisted to develop the ability to make decisions pertinent to both their individual beings and their roles as active participants in their physical and social environments.

Values to Live By

In keeping with the basic tenets of democracy (and with optimism about the nature of man and the efficacy of democratic ideals), the social studies program invites open inquiry into the definition and application of individual and social values. Such inquiry will offer students **experience in living** as **preparation for living.** It cannot be assumed that the ability to make decisions of either a personal or social nature is a skill that children are either born with or acquire incidentally. Rather, it is a skill that is developed as children acquire appropriate knowledge and analyze and clarify values, attitudes, and feelings that are contingent upon situations and issues. Stated differently, it might be said that knowledge is an essential component of the decision-making process but is not in and of itself sufficient. Values, attitudes, and feelings frequently determine what knowledge we will accept, and consequently, the nature of decisions that we make. It is necessary, therefore, for students to gain experience in identifying, clarifying, and assessing values, and establishing how they relate to the knowledge derived. In this way, children will come to know their own ideas and feelings as well as those of their peers and the adult generation; they will deal not only with "what is" but also with "what ought to be" and will acquire those skills they will need as intelligent shapers of their world.

ATTENDING TO AFFECTIVE AND COGNITIVE OBJECTIVES

A. The Valuing Process

Priority on valuing

Consistent with the above rationale, the objectives of the social studies program[1] place high priority on the valuing process. The valuing process involves three basic skills.[2] Students in the Alberta social studies should demonstrate that they are:

Choosing—

1. Identifying all known alternatives.
2. Considering all known consequences of each alternative.
3. Choosing freely from among alternatives.

Acting upon values

Prizing—

4. Being happy with the choice.
5. Affirming the choice, willingly and in public if necessary.

Acting—

6. Acting upon the choice.
7. Repeating the action consistently in some pattern of life.

Affective and cognitive aspects of valuing

As students engage in the valuing process, the experience will involve both emotional reactions and intellectual understandings. It is essential to distinguish these affective and cognitive capacities and to direct educational effort along both dimensions.[3]

B. Affective Objectives

Affective objectives emphasize a feeling tone, an emotion, or a degree of acceptance or rejection. To choose, prize and act consistently and effectively, students should demonstrate that they are:

—Aware of values, willing to take notice of values and giving controlled or selected attention to values.

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[1]Please note that the objectives which follow are expressed in behavioral terms. They indicate the processes in which students should engage and, in a general way, identify the substantive content to which students' behavior should relate. In other words, the objectives include both processes and content.

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[2]Raths, Louis, et al., *Values and Teaching* (Columbus, Ohio: Charles E. Merrill & Co., 1966).

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[3]Scriven, Michael, "Student Values as Educational Objectives" (West Lafayette, Ind.:Social Science Education Consortium, 1966) p. 18.

—Responding to values with openness, willingness and satisfaction

Internalizing a value complex

—Accepting values, preferring values and committing themselves to values

—Conceptualizing their own values and organizing a value system

—Becoming characterized by a value or value complex.[4]

The values referred to above should, at the awareness and response levels, include a wide range of individual and social values. Students eventually should accept, prefer, and commit themselves to certain of these values, while rejecting others. Finally, they should conceptualize their own values, organize a value system, and through their actions, become characterized by a particular value or value complex.

Value issues as content

A powerful means of attaining these affective objectives is to have students confront real problems that involve conflicting values. Such problems may be referred to as value issues. Focusing upon value issues can enable students to clarify their own values and to recognize the value positions of others. Peer relationships, family matters, work, politics, religion, money, recreation, morality, culture, and other problem areas are fertile sources of value issues. The most potent of value issues will require students to examine their own behavior relative to:

1. The dignity of man
2. Freedom
3. Equality
4. Justice
5. Empathy
6. Loyalty
7. Other values

---

[4] Krathwohl, David, et al., *Taxonomy of Educational Objectives: Affective Domain* (New York: David McKay Co., Inc., 1964).

C. Cognitive Objectives

Cognitive objectives involve the solving of some intellectual task. The choosing, prizing and acting phases of the valuing process require that each student develop cognitive skills that will enable him to work with others in the solving of social problems. The cognitive skills which are exercised in problem solving are varied and complex. These skills may be summarized as follows.[5] Students should be able to:

Cognitive skills summarized

—Recall and recognize data which are pertinent to social problems

—Comprehend pertinent data (This skill includes the ability to translate, interpret and extrapolate from data.)

—Analyze pertinent data in order to identify elements, relationships and organizational principles

—Evaluate pertinent data in terms of internal and external criteria

—Synthesize pertinent data in order to create an original communication or propose a plan of action

—Apply pertinent data in the solving of social problems

The "data" referred to in the above objectives might be drawn from everything man knows, believes, and can do—both formally structured knowledge from the disciplines and informally structured knowledge from ordinary experience.[6] Such data include:

Categories of knowledge content

—Knowledge of specific terminology and facts

—Knowledge of ways and means of dealing with social problems

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[5] Bloom, Benjamin, et. al., *Taxonomy of Educational Objectives: Cognitive Domain* (New York: David McKay Co., Inc., 1956) and Sanders, Norris M., *Classroom Questions: What Kinds?* (New York: Harper and Row 1967). Note that skills have been listed in an order more closely resembling the problem solving process. Bloom's *Taxonomy* lists skills according to difficulty; the order being recall, and recognition, comprehension, application, analysis, synthesis, and evaluation.

[6] Johnson, Mauritz, *The Translation of Curriculum into Instruction* (Ithaca, N.Y.: Cornell University, 1968), p. 2.

—Knowledge of concepts, generalizations, theories and structures.[7]

Knowledge of specific terminology and facts should serve as a basis for dealing with social problems and understanding concepts, generalizations, theories and structures.

Knowledge of ways and means of dealing with social problems should include the ability to:

Problem solving method

1. Identify and clarify the problem
2. Formulate hypotheses
3. Collect data
4. Classify data
5. Analyze data and evaluate the desirability and feasibility of taking action on the problem
6. Propose a course of action and examine the desirability and feasibility of taking action on the problem.[8]

Knowledge of ways and means of dealing with social problems should also include the ability to:

Social skills

1. Interpret the feelings and ideas of others
2. Respond to the feelings and ideas of others in a manner appropriate to the occasion
3. Express one's own feelings and ideas to others
4. Cooperate with others, though not to the extent of compromising basic values.

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[7] Bloom, *op. cit.*, p. 62 ff.

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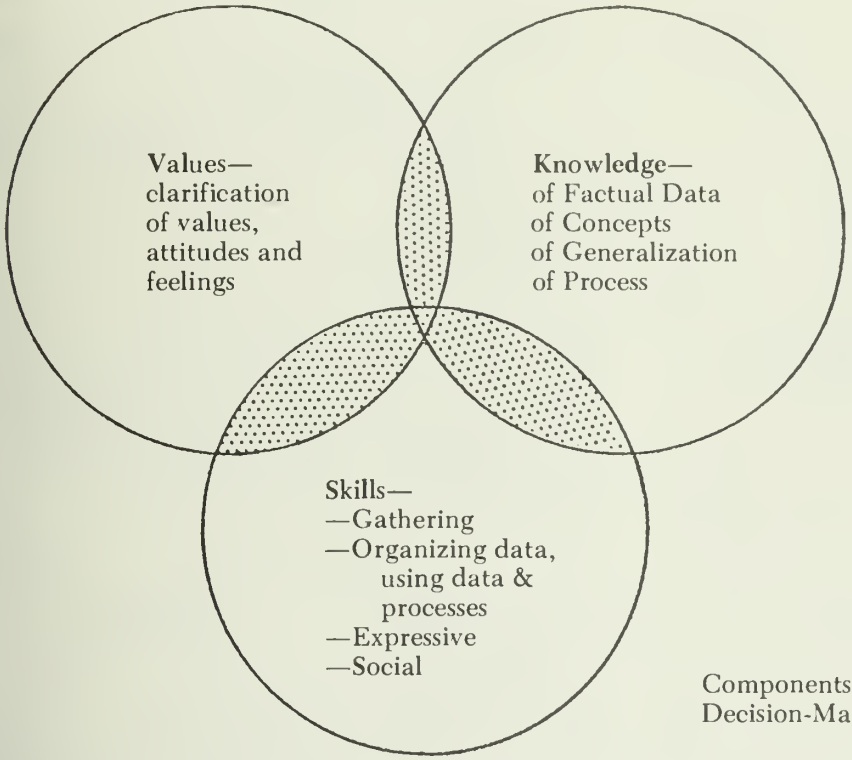
[8] Simon, Frank. *A Reconstructive Approach to Problem-Solving in the Social Studies* (Calgary: The University of Calgary, 1970). The Simon model differs from most methods of problem solving in that it leads to action on the problem.

INTER-RELATEDNESS OF VALUES, KNOWLEDGE AND SKILLS

The inter-relatedness of the values, knowledge, and skills components of the Alberta social studies curriculum might be diagramatically represented as follows:



Components of Decision-Making

In the decision-making process, **knowledge** in its various forms is essential but dependent for its existence, validity and application upon the skills used to obtain, organize and apply it, and the influence of pertinent values. Similarly, skills of a varied nature must be developed to facilitate sound decision-making, for these are the vehicle by which knowledge is obtained and values explored. Finally, values, attitudes, and feelings are explored, clarified, and assessed by the utilization of skills and in the light of an ever-expanding knowledge base.

Knowledge of concepts, generalizations, theories and structures should result from students synthesizing the specific data gathered or produced while confronting value issues. Some of the major concepts needed in studying human behavior are outlined below. These concepts should be used by students in developing generalizations and theories which seek to explain people's values.

Inter-disciplinary base of social studies concepts

INTERACTION is a key concept in the understanding of social problems. History, geography and the social sciences describe in part man's interaction with his social and physical environment.

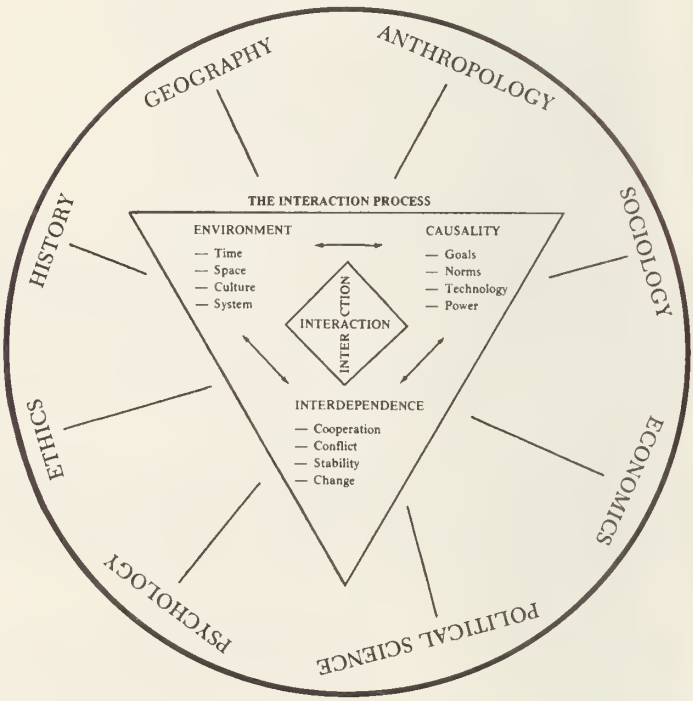
1. **ENVIRONMENT** is, itself, an important concept which can be defined in terms of **Time, Space, Culture** and **Systems.**

2. Man's interaction with his environment produces **CAUSAL RELATIONSHIPS.** In order to understand causality, one needs to recognize that behavior is affected by Goals, Norms, Technology, and Power.
3. Since all man's interactions involve cause and effect relationships, he lives in a state of **INTERDEPENDENCE.** Interdependence may take the form of Cooperation and/or Conflict and may produce Stability and/or Change.

A diagramatic representation of the interaction process appears below.

The spiralling of concepts

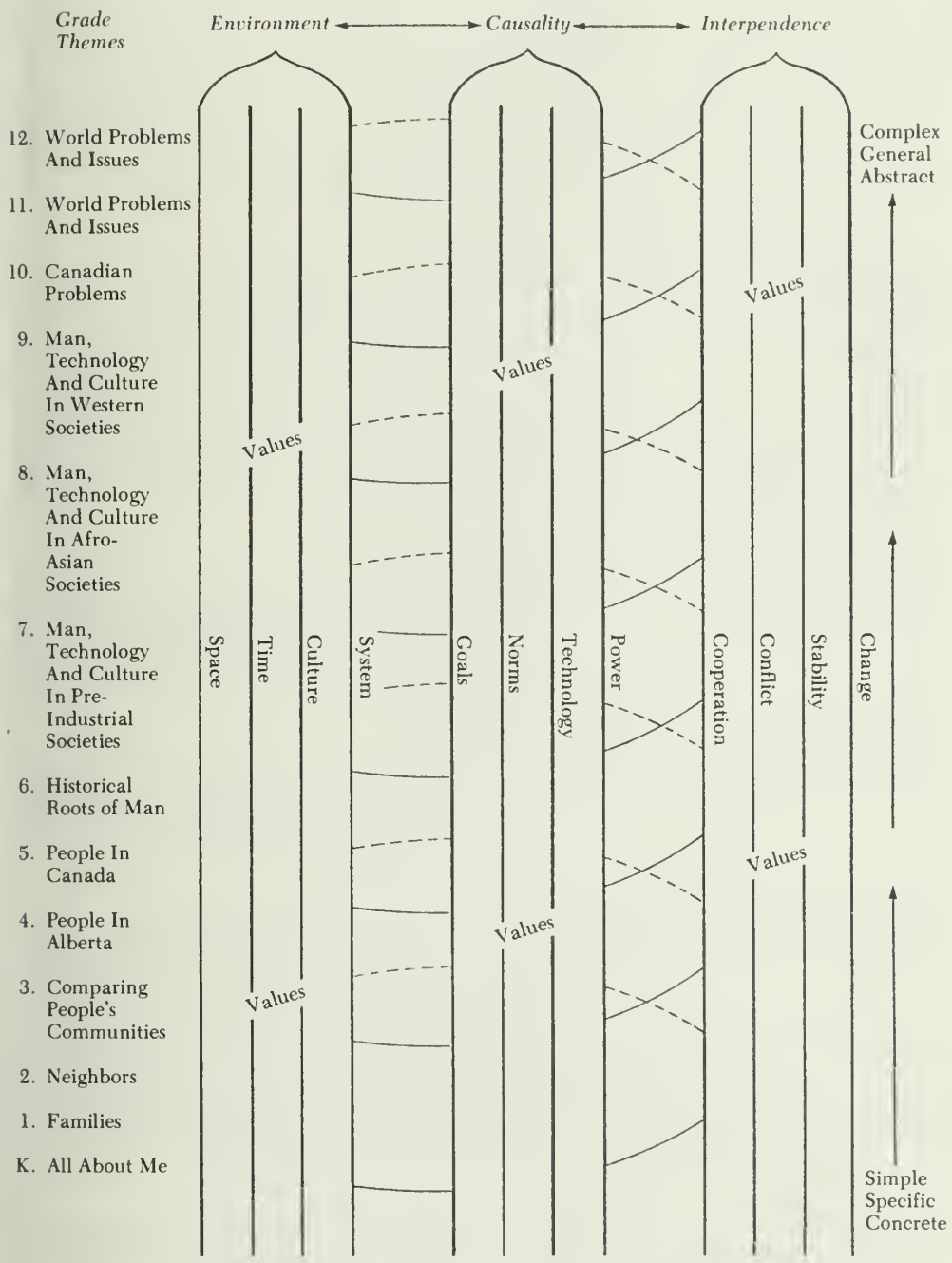
These and other concepts should be studied in more than one grade level on the understanding that lower grades will attend to the concept in a specific, concrete and simple manner. Succeeding grades will treat each concept in greater generality, abstractness, and complexity.[9] A diagramatic representation of spiralling concepts is shown on page 17.



[9] Taba, Hilda, *Teachers' Handbook for Elementary Social Studies* (Don Mills, Ontario: Addison-Wesley Company, 1967), Chapter 4.

THE SPIRAL OF CONCEPT DEVELOPMENT

The Interaction Process



Values: Dignity of Man, Freedom, Equality, Loyalty, Justice, Empathy, etc.

Planning For The Attainment of Multiple Objectives

The preceding statements of objectives offer only a general indication of the processes and content of learning opportunities in the social studies. More detailed planning of learning opportunities is the responsibility of each teacher and class. All learning opportunities must be consistent with the objectives outlined above, whether the learning opportunity arises from the structured scope and sequence or in connection with a problem of current interest.

A. Structured Scope and Sequence

Two-thirds time on structured scope and sequence

Approximately two-thirds of social studies class time will be spent inquiring into themes, value issues and concepts which fall within a scope and sequence specified by the Department of Education. This scope and sequence is very general, thus permitting teachers and students to select learning opportunities according to their own needs and interests. Topics and themes for each grade are indicated below:

Kindergarten—All about Me

Grade I—Families

—Analysis of family living through case studies of, for example, a contemporary family, a family of long ago, an Afro-Asian family, and other families

Grade II—Neighbors

—Analysis of interactions which occur among, for example, the local neighbours, rural and urban neighbours, neighbours in other cultures

Grade III—Comparing People's Communities

—Comparison and contrast of community life in, for example, a modern-day Indian or Eskimo community and a North-American megalopolis; a village in Africa or Asia, and a community in the Pacific, or tropical South America; a Mennonite or Hutterite community and other communities which lend themselves to comparison and contrast

Grade IV—People in Alberta

—Historical, economic, sociological and/or geographic analysis of Alberta's people, including comparison and contrast with other world

areas that have similar historical, geographic and/or economic bases, for example, Australia, Argentina, U.S.S.R., Middle East oil producers, Western U.S.A. and other areas

Grade V—People in Canada

—Sample studies to analyze historical and/or contemporary life in Canadian regions, for example, people in an Atlantic fishing port, people in a French-Canadian mining town or farm community, people in a St. Lawrence Seaway port, people in an Ontario manufacturing center, people in a Prairie farm or oil town, people in a British Columbia fruit or forestry industry, people in a Western distribution center, people in a coastal city, people in a Northern mining town, and other sample studies

Grade VI—Historical Roots of Man

—Anthropological analysis and social history of early civilizations in, for example, The Mediterranean area (e.g., Egypt, Greece, Rome), Far East (e.g., India, China), The Americas (e.g., Incas, Mayans, Aztecs, North American Indian), and Africa (e.g., Numidians, Nubians, or other tribes)

Grade VII—Man, Technology and Culture in Pre-Industrial Societies

—Conceptual understanding of Man, Technology and Culture through case studies of primitive, pre-industiral societies to be selected by teachers and students

Grade VIII—Man, Technology and Culture in Afro-Asian Societies

—Depth studies of societies selected from Africa, Asia (excluding the U.S.R.R.), the Middle East and Pacific Islands

Grade IX—Man, Technology and Culture in Western Societies

—Depth studies of societies selected from the Americas (excluding Canada), Europe, all of U.S.S.R., Australia and New Zealand

Grade X—Canadian Problems

—Historical, economic, sociological, political problems facing Canada

Grade XI—World Problems and Issues
—Tradition versus Change
—Population and Production

Grade XII—World Problems and Issues
—Political and Economic Systems
—Conflict and Cooperation

B. Problems of Current Interest

One-third time unstructured

Approximately one-third of class time in social studies may be devoted to problems that are of current interest to students and teachers. The Department of Education does not intend to structure the use of this one-third time. Problems which meet the criteria which follow may arise as extensions of the main themes and value issues for each grade. They may relate to problems of individual students, the school, the community, or the world, and may concern the past, the present and/or the future. A given problem may be studied by the whole class, by a group, or by individual students. It is important that a record be kept of the problems studied by each student throughout his or her school career.

Joint planning

Students and teachers should jointly plan the use of the one-third time. Generally speaking, the teacher should view the one-third time as an opportunity for students to develop independence and responsibility.

The amount of teacher leadership required in the planning and use of the one-third time will vary according to the ability, experience, and maturity of the class. The teacher's influence should be exerted in a manner and to a degree consistent with this objective.

Distribution of time

The one-third time may be distributed over the school year (or semester) in any way that students and teachers see fit. Three of the many possible alternatives are:

1. One time block, accounting for one-third of total class time, taken at any point during the year
2. Two- or three-week "units" of time, accounting for one-third of total class time, taken at various points during the year
3. Propitious occasions, accounting for one-third of total class time, taken at opportune times during the year.

C. Criteria for Selecting Learning Opportunities

In selecting the processes and content for day-to-day experiences in the social studies curriculum—whether for the two-thirds time broadly structured by the Department of Education or for the one-third time devoted to problems of current interest—teachers and students should attend to the following criteria:

Futurity

1. Does the experience have futurity? That is, can it contribute to the attainment of affective and cognitive objectives?
   a. Does it involve a pertinent value issue?
   b. Can it contribute to the development of social and/or inquiry skills?
   c. Does it provide for growth in students' understanding of concepts?
   d. Does the experience fit as part of a sequence which will lead to a reasoned pride in Canada tempered with a world view and an understanding of significant social problems?

Relevance

2. Is the experience relevant to the needs and interests of students?

Materials

3. Are data and materials available and/or can students gain experience through gathering primary data?

Overlap

4. Does the experience avoid the disadvantageous overlap and repetition of experiences in earlier or later grades?

GRADE VII SOCIAL STUDIES

Man, Culture And Technology In Pre-Industrial Societies

The following course outline is based on the themes *MAN*, *CULTURE*, and *TECHNOLOGY*. Value issues relating to each theme are outlined below. It is intended that this study should provide the basic skills and conceptual understandings needed for the in-depth studies of *MAN*, *CULTURE*, and *TECHNOLOGY* at the Grade VIII AND IX levels.

Each value issue should be studied in the context of a primitive or pre-industrial society by the teacher and students. The society selected for study should serve to illustrate the concepts *MAN*, *CULTURE*, and *TECHNOLOGY* in concrete, simple and specific forms. Up to one-third of the time may be devoted to the study of problems of current interest to students and teachers.

Theme A: What is Man?

Value Issues:
1. What is human about human beings?
2. Should each man strive to be a unique individual?
3. Should man strengthen his group identities?

Theme B: What is Culture?

Value Issues:
1. How can cultures best solve their basic problems?
2. Why are cultures unique, yet similar?
3. To what extent should cultures incorporate change?

Theme C: What is Technology?

Value Issues:
1. To what extent has technological change benefited pre-industrial societies?
2. Should a pre-industrial society do what is technically possible whether or not it is socially desirable?

GRADE VIII SOCIAL STUDIES

Man, Technology, And Culture In Afro-Asian Societies

The following course outline is based on the themes *MAN*, *TECHNOLOGY*, and *CULTURE*. Value issues relating to each theme are outlined below. Each value issue should be studied in the context of an Afro-Asian society to be selected by the teacher and students. For purposes of this course, "Afro-Asian" societies include Asia (excluding the U.S.S.R.), Africa, the Middle East and the Pacific Islands.

Up to one-third of the time may be devoted to the study of problems of current interest to students and teacher.

Theme A: Afro-Asian Man

Value Issue: Should individual worth be maximized in an Afro-Asian society?

Theme B: Afro-Asian Technology
Value Issue: Should Afro-Asian societies change the methods by which resources are utilized?

Theme C: Afro-Asian Culture
Value Issue: Should social and cultural change in an Afro-Asian society be viewed as necessary and desirable?

Theme D: Afro-Asian Society and International Relations
Value Issue: Should an Afro-Asian society pursue a policy of non-alignment?

GRADE IX SOCIAL STUDIES

Man, Technology, And Culture In Western Societies

Preamble

The following themes are to be studied within the context of Western Societies. One-third time may be devoted to the study of problems that are of current interest to students and teachers.

Theme A: Man in the Western World

Major Problem:

How should the society under study resolve conflicts between individual freedom and group control?

Value Issues:
1. Should the state assume responsibility for the welfare of the individual?
2. What institutions best ensure human rights will be protected and to what extent should the individual sacrifice his rights for the benefit of society?
3. By what means and to what extent can the individual and the group influence decision-making?

Theme B: Technology in the Western World

Major Problem:

What institutions best ensure that human rights will be protected and to what extent should the individual sacrifice his rights for the benefit of society?

Value Issues:
1. To what extent should man use human and natural resources to improve his standard of living?
2. How should man meet the challenge of change created by technology?
3. To what extent should the wealth and technology of one nation be shared with other nations?

Theme C: Culture in the Western World

Major Problem:

How should individuals and social groups of differing political, economic, social and cultural convictions adjust so as to minimize conflicts within the Western World?

Value Issues:

1. Should men work toward a common culture or should differences be encourged?
2. Should one's efforts be directed toward material want or toward the development and preservation of aesthetic, moral and spiritual needs?
3. How can the quality of urban life be improved?

SCIENCE

OBJECTIVES OF SECONDARY SCHOOL SCIENCE

The learning of science, as an area of human endeavor, should provide the student with a scientific literacy which enables him to assume an active and useful role as a citizen in a democratic society. It may be assumed that this literacy is best achieved by considering the individual needs of students and through independent study and learning.

Specifically, the following objectives must be achieved in Secondary School Science:

1. To promote an understanding of the role that science has had in the development of societies:
   a) history and philosophy of science as part of human history and philosophy
   b) interaction of science and technology
   c) effect of science on health, population growth and distribution, development of resources, communication and transportation, etc.
2. To promote an awareness of the humanistic implications of science:
   a) moral and ethical problems in the use and misuse of science
   b) science for leisure-time activities
3. To develop a critical understanding of those current social problems which have a significant scientific component in terms of their cause and/or their solution. The students might study such issues as:
   a) depletion of natural resources
   b) pollution of water and air
   c) over-population
   d) improper use of chemicals
   e) science for the consumer
4. To promote understanding of and development of skill in the methods used by scientists:
   a) processes in scientific inquiry such as observing,hypothesizing, classifying, experimenting and interpreting data
   b) intellectual abilities such as intuition, rational thinking, creativity, and critical thinking
   c) skills such as manipulation of materials, communication, solving problems in groups, and leadership
5. To promote assimilation of scientific knowledge:
   a) emphasis on fundamental ideas
   b) relevance of scientific knowledge through inclusion of practical applications
   c) application of mathematics in science
   d) interrelationships between the sciences

e) open-endedness of science and the tentativeness of scientific knowledge

6. To develop attitudes, interests, values, appreciations, and adjustments similar to those exhibited by scientists at work

7. To contribute to the development of vocational knowledge and skill:
   a) science as a vocation
   b) science as background to technical, professional and other vocations.

JUNIOR HIGH SCHOOL SCIENCE

General Objectives

The junior high school science program has four fundamental but inseparable objectives. A major objective is to develop student awareness of the humanistic and social implications of science. By emphasizing the development and use of inquiry-process skills as tools of investigation, the program is designed to enable the student to better understand and appreciate the true nature of science and to develop as an investigator and self-learner. To develop student attitudes that are in harmony with the spirit of scientific investigations is the third objective. The fourth objective is to have the student develop basic science concepts. A number of concepts; that is, abstract ideas generalized from particular experiences, are to be developed under each of the major concepts which provide a structure and framework for the program of studies for each of the grades. These major concepts are related to the following six conceptual schemes outlined for Elementary School Science:

1. When energy changes from one form to another, the total amount of energy remains unchanged.
2. When matter changes from one form to another, the total amount of matter remains unchanged.
3. Living things are interdependent with one another and with their environment.
4. A living thing is the product of its heredity and environment.
5. Living things are in constant change.
6. The universe and its component bodies are constantly changing.

Expanded Statement of Objectives

A. *Development of Humanistic and Social Implications of Science*

Students should appreciate the increasingly important role science is playing in the development of our society. With each new discovery, the need for understanding the effects of science on our lives becomes greater.

Students should be given opportunities to recognize, understand, and evaluate the social and environmental consequences of science and technology in terms of present and future conditions. They should be made aware of the valuable contributions of science to improve man's well-being as well as the dangers that may result from the misuse of scientific knowledge.

The rapid depletion of natural resources in our environment, water and air pollution, overpopulation and improper use of chemicals are only a few of the many problems that involve moral as well as scientific considerations.

B. *Skills to be Developed in Science*

1. Process Skills
   A key objective of the junior high school science program is to make the student an increasingly active and dynamic investigator of science — using the processes of the scientist. Through conscious, systematic development of these processes, the student becomes increasingly better equipped for more complex learning in the fields of science as well as in other areas of investigation.

   The following processes are considered to be an essential part of the student's learning:

   a) Observing—using all the senses
   b) Classifying—grouping related objects or ideas
   c) Quantifying—using numbers and measurements
   d) Communicating—using such means as discussion, tabulation, graphing, etc.
   e) Inferring
   f) Predicting
   g) Formulating hypotheses
   h) Defining terms
   i) Controlling variables
   j) Interpreting data and results
   k) Formulating models—verbal, pictorial, and concrete
   l) Experimenting—planning and designing an investigation
   m) Processing of data—organizing, representing graphically, treating mathematically
   n) Identifying problems
   o) Seeking further evidence
   p) Applying discovered knowledge.

2. Motor Skills
   In order to develop manipulative skills, students in the junior high school science must have frequent opportunities for firsthand investigative experiences that involve the handling of materials and equipment.

C. *Attitudes to be Developed*

Much of the spirit and meaning of science is transmitted to students from the teacher. Some of the attitudes the teacher should endeavor to develop in students are:

1. Curosity and interest
2. Intellectual honesty
3. Open-mindedness
4. Belief in cause-effect relationships
5. Suspended judgement when data is inadequate
6. A respect for accuracy and precision

7. Skepticism of statements which may be biased or based on inadequate information.

D. *Concepts to be Developed*

GRADE VII SCIENCE

Recommended Texts

Nuffield Foundation. Text 1—*Introducing Living Things*, Text 2—*Life and Living Processes*. Longman Canada, 1966.

Thurber and Kilburn. *Exploring Life Science*. Allyn and Bacon, 1968.

Concepts

1. Many living organisms are distributed and occupy many environments. Plants and animals are adapted and distributed in relation to geographic and environmental factors.
2. Diverse plants and animals may be classified into groups which have definite characteristics.
3. All living things interact with and are interdependent with each other and their environment.
4. Cells are the unit of structure and function of most living things.
5. Living organisms carry on fundamental processes to sustain life.
6. The fundamental theories of heredity and evolution explain the continuity of life and the wide variations in organisms.
7. Man has changed and continues to change the environment and the distribution of organisms.

GRADE VIII SCIENCE

Recommended Texts

Secondary School Science Project. *Time, Space and Matter* (Princeton Project). McGraw-Hill, 1967.

Thurber and Kilburn. *Exploring Earth Science*. Allyn and Bacon, 1969.

Concepts

1. Water is the prime agent in various earth processes.
2. The motions of the earth's waters and its changes in physical state are in direct response to the changes in its energy content.
3. Convection currents are the result of the unequal distribution of solar energy.
4. The earth, like all other celestial objects, is in motion.
5. The earth's crust, and its component rocks and minerals, is continually changing in response to various internal and external physical forces and chemical actions.
6. Living organisms have contributed to the formation of the various components of the earth's crust.

7. Knowledge of the earth's motions, crust, and interior can be used as a model for comparison in studying the moon and other celestial bodies.
8. The Milky Way Galaxy, of which our solar system is a part, is one of a countless number of apparently similar galaxies composing the universe.
9. Various theories attempt to explain the origin of the solar system and the universe.

GRADE IX SCIENCE

Recommended texts

Marean and Ledbetter. *Physical Science: A Laboratory Approach.* Addison-Wesley, 1968.

Thurber and Kilburn. *Exploring Physical Science.* Allyn and Bacon, 1969.

Concepts

1. Matter occupies space and has mass.
2. The forms and behavior of matter can be explained by the Kinetic Molecular Theory of Matter.
3. The many forms of energy can be transferred or converted from one form to another, but the total amount of energy remains constant.
4. Matter and energy are related and interchangeable.
5. Energy is responsible for bringing about physical and/or chemical changes in the forms and behavior of matter.

MATHEMATICS

Objectives

The objectives for junior high school mathematics courses are:

1. To develop an understanding of mathematical concepts and an appreciation of mathematical structure.
2. To develop skill in the use of the fundamental processes.
3. To develop systematic methods of analyzing problems and of presenting their solutions.
4. To develop habits of precise thought and expression.
5. To develop an understanding of the significance and application of mathematics in the modern world.

Junior High School Mathematics Course Outlines

The list of topics indicates the program of studies in junior high school mathematics. While the list has been distributed through three years of study, it is not necessary to follow the yearly sequence of topics indicated. If departures from the sequence are made, coordination in the school should ensure that the complete program has been offered by the end of the junior high school period.

GRADE VII MATHEMATICS

Recommended Texts

Hanwell et al. *Contemporary Mathematics 1.* Holt, Rinehart and Winston, 1964.

Keedy et al. *Exploring Modern Mathematics.* Book I. Holt, Rinehart and Winston, 1965.

Van Engen et al. *Mathematics: Concepts and Applications.* First Course. Scott, Foresman & Co. (Gage), 1969.

Topics

A. *Sets*
   1. An understanding of the concepts of set and subset
   2. The ability to make appropriate use of set notation
   3. Knowledge of and ability to perform the operations of union and intersection.

B. *The Whole Number System*
   1. The position of whole numbers on the number line
   2. Ability to perform operations on the whole numbers
   3. Recognition and identification of the following properties of operations on the whole number system
      a) closure
      b) commutative
      c) associative
      d) distributive
   4. The properties of the identity elements
   5. Conventions for the order of operations in simplification of expressions

6. Operations with number sentences containing variables—equalities and inequalities
7. Use of number sentences to solve problems.

C. *Factors and Multiples*

1. Understanding and application of the terms "factor" and "multiple"
2. Identification of prime and composite numbers, and use of these characteristics
3. Prime factorization of composite numbers
4. Identification of common factors and common multiples of composite numbers
5. Calculation of GCF and LCM of numbers.

D. *Fractional Numbers*

1. Understanding fractional or rational numbers of arithmetic
2. The position and order of fractional numbers on the number line
3. The ability to perform operations accurately on fractional numbers
4. Recognition and identification of properties of operations on the fractional number system
5. Decimal numeral representation of fractional numbers, and the expansion of the decimal numeration system
6. Computations using decimal numbers
7. Transformation of fractional numbers into decimal numeral form; repeating and terminating decimals
8. Simplification of expressions and the solution of problems involving fractions.

E. *Rates, Ratio and Percent*

1. Development of the concepts, common and unique properties of ratio and rate
2. The meaning of percent
3. Transformation of percent into decimal and fractional equivalents
4. Solution of problems using and involving rates, ratio and percent.

F. *Geometry*

1. Development of the ability to recognize and identify the following elements of plane geometry, and extending knowledge of the interrelationships of these elements: point, line, plane, segment, ray, curve, closed curve, angle, triangle, other simple polygons, circle, interior and exterior regions.

GRADE VIII MATHEMATICS

Recommended Texts

Hanwell et al. *Contemporary Mathematics* 2. Holt Rinehart and Winston, 1965.

Keedy et al. *Exploring Modern Mathematics.* Book II. Holt, Rinehart and Winston, 1966.

Van Engen et al. *Mathematics Concepts and Applications.* Second Course. Scott, Foresman & Co. (Gage), 1969.

Topics

A. *Rational Numbers*

1. An examination of integers as a subset of the rational numbers
2. The position and order of integers on the number line
3. Extending computational facility and understanding of the operations on integers
4. Extending knowledge of closure, associative, commutative, distributive, and identity properties of operations on integers
5. Extending the number system to positive and negative rational numbers
6. The position and order of the extended system on the number line
7. Operations + — X ÷ in the rational number system
8. Number system properties in the rational number system
9. Investigation and understanding of the properties of zero
10. Reinforcement of computational skills with fractional numbers including decimal numerals
11. Development of the concept, notation and computational skills of exponents and related properties:
    a) positive, negative, and zero integral powers
    b) use of exponential notation in multiplication and division.

B. *Conditions or Equations*

1. Use of conditions or equations in the solution of problems involving equalities and inequalities
2. Use of graphs to determine the solutions to conditions or equations
3. The solution of problems involving conditions or equations.

C. *Geometry*

1. The measure and comparison of segments using British and metric units
2. Measurement of angles
3. Categorization of the types of angles formed by the intersection of coplanar lines
4. The triangle, including classifications, similarity, perimeters, areas, and the unique property of the sum of the interior angles
5. The quadrilaterals, including classifications, perimeters and areas
6. Classification of polygons
7. Simple geometric constructions: bisectors of angles and segments, construction of parallels and perpendiculars, and construction of simple polygons
8. The circumference and area of circles
9. Applications of geometry to the solution of problems.

D. One of the following three topics:

Introduction to Real Numbers

1. Extension of the number system to include irrational numbers

2. Properties of the operations on the real numbers: closure, commutative, etc.
3. Additional properties of the number system: order, completeness, density
4. An introduction to graphing on the real plane
5. Solution of problems involving conditions or equations with real numbers

OR

Introduction to Polynomials in One Variable

1. Introduction to polynomials
2. Addition, subtraction and multiplication of polynomials.

OR

Extension of Geometry

1. The characteristics of congruent and similar triangles
2. The Pythagorean Theorem and its applications
3. Categorization, surface areas and volumes of prisms, cylinders, cones, pyramids and spheres
4. Solution of practical problems in geometry.

GRADE IX MATHEMATICS

Recommended Texts

Hanwell et al. *Contemporary Mathematics* 3. Holt, Rinehart and Winston, 1966.

Keedy et al. *Exploring Modern Mathematics.* Book III. Holt, Rinehart and Winston, 1967.

Devlin et al. *Elementary Algebra.* Gage, 1972.

Armour, C. *Geometry.* Gage, 1974.

NOTE: The specific topics remaining for presentation in the third year of junior high school will depend upon the option elected for Unit D in the Grade VIII year. Those options now taught in Grade VIII should be included in the Grade IX program.

Topics

A. *Extension of Real Numbers*

1. Introduction to real numbers (see Grade VIII program, Section D-1)
2. Calculating and graphing solutions to problems involving conditions or equations
3. Solution of problems involving real numbers.

B. *Extension of Polynomials*

1. Introduction to polynomials (see Grade VIII program, Section D-2)
2. Factoring of polynomials:
   a) common factor
   b) difference of squares

c) trinomials that are perfect squares
d) trinomials that are the product of binomials

3. Division of polynomials, extension of rational expressions
4. Addition, subtraction, multiplication and division of rational expressions
5. An awareness of absolute value of an expression
6. Solution of problems involving linear conditions.

C. *Extension of Geometry*

1. (See Grade VIII program, Section D-3)

D. *Variation*

1. A study of direct and inverse variation
2. The expression of linear and parabolic expressions in graphic form
3. Common formulae in applied business and science
4. The solution of problems involving applications of variation and formulae.

HEALTH

INTRODUCTION

Purpose

The school health program has evolved because of the concern that a community has for the health of its children. The purpose of the program is many sided. It includes the total activity which is planned, organized and developed to prepare boys and girls for healthful living. A sound health program consists of instructions, counselling and guidance which through a variety of activities seeks to protect and improve the children's health.

The subject matter of health is important but not in the sense of memorizing the types of muscles in the body, the various kinds of communicable diseases and the values of cleanliness. These facts assume importance only as children incorporate them to their habits and attitudes while adjusting to their environment. The study of health should help boys and girls come to know health principles which they can apply in daily living. There are many skills involved in this approach to the study of health; reading for information, writing to make records, identifying problems, planning together, and evaluation. It implies that teachers should do less telling and more guiding in developing the desirable habits and attitudes in pupils relative to personal, community and national health.

Objectives

Schools seek to provide an educational environment in which the pupil may attain complete development as an individual. The health program contributes toward achieving all of the objectives of education. However, this program makes its greatest contribution to the achievement of physical and mental fitness. Every pupil, to the limit of his nature, needs and capacity, should have the opportunity to develop and maintain good physical and mental health.

Basic Understandings:

An understanding of the nature of the human being—physical, mental, emotional, and social—is basic to successful application of the principles of healthful living.

Good health is a state of complete mental, physical, social and spiritual well-being as well the absence of disease and infirmity.

Physical and mental health are closely related.

The state of an individual's health, physical and emotional, should be considered in the choice of a vocation for it is a factor in success.

Keeping oneself in good physical and mental health helps one meet more successfully the problems encountered in everyday living.

The principles of good mental hygiene act as guides to the development of desirable personality traits.

Growth and development—physical, mental, emotional, spiritual and social—are continuing processes throughout the life of the individual.

Both are influenced by diet, exercise, rest, relaxation, recreation, and freedom from sickness and accident.

Practices of wholesome and unwholesome living have certain physical and psychological effects upon the human being.

Evaluation in Health Education

The following are some of the purposes which may be served by planning for continuous evaluation of your success in achieving the objectives of the health education program:

1. To develop the pupil's ability to evaluate his achievement in terms of growth, skills, social relationships and to learn about abilities in order that he may become increasingly self-directive and self-confident.
2. To ascertain and appraise pupil health status, interests, needs, attitudes, opinions and practices.
3. To appraise individual pupil and group achievement and understanding in the classroom.
4. To stimulate pupil interest and motivate learning.
5. To help each student to understand his strength and weaknesses.
6. To appraise and judge what has been accomplished on the basis of proposed objectives and outcomes.
7. To locate areas of individual pupil and group instructionala needs, e.g., physiology, personal hygiene, community health and nutrition.

Numerous devices are available to accomplish the above purposes. They include teacher-prepared tests and examinations, standardized tests, observations of the pupil in practical situations in and around the school, hypothetical practical situations for testing understandings of health and the ability to apply it wisely. Group discussions are sometimes an effective technique in evaluating group progress.

It is important that health knowledge must be provided in desirable quantity and quality and that the facts and understandings be evaluated. Without this, desirable health behavior is not to be expected.

Recommended Texts

Grade VII *Health For Young Canadians:* Simonson et al.

Grade VIII *Health and Fitness For Canadian Youth:* Simonson, Hastie & Doherty.

Grade IX *Fitness For Living:* Frache and Brown (Macmillan).

SCOPE AND SEQUENCE

CONTENT

GRADE VII

Unit I *Looking Ahead:*
- A. Growth
- B. Variations in Growth and Development
- C. Fitness
- D. To Smoke or Not to Smoke

Unit II *Safety at Home:*
- A. Cause of Accidents
- B. Safety to and from School

Unit III *You from the Outside:*
- A. Posture—A Telling Sign
- B. Skin and Complexion
- C. Teeth
- D. Grooming

Unit IV *Looking Outside—The Eyes and the Ears:*
- A. The Organ of Sight
- B. The Organ of Hearing

Unit V *Your Framework and Power Plant:*
- A. Your Body's Framework
- B. An Efficient Power Plant

GRADE VIII

Unit I *Understanding Growth:*
- A. How Your Body Grows
- B. Variations in Growth
- C. Factors Affecting Growth
- D. Acceptance of Growth and Its Related Problems

Unit II *Safety at Work and Play:*
- A. Safety at School
- B. You Play Safely
- C. Safety in Sports

Unit III *Nourishing Your Growing Body:*
- A. Maintaining Body Needs

B. Measurement of Food
C. Food Substances
D. Food Preparation and Preservation
E. Deficiency Diseases
F. The Current Nutritional Picture

Unit IV Body Machines for Utilizing Foods:
A. The Food Refinery
B. Digestive Disorders
C. Excretion
D. Detecting Disorders

Unit V Progress Against Diseases:
A. Development of Health Knowledge
B. Diseases of the Past
C. Diseases of the Present and Future
D. A Challenge for You (New Drugs)

GRADE IX

Unit I Respiratory System:
A. Man's Air Conditioner
B. Mechanics of Breathing
C. Diseases and Disorders

Unit II The Circulatory System:
A. History
B. Structure
C. Function
D. Some Factors Affecting the Circulatory System
E. Diseases and Disorders
F. First Aid
G. Medical Advances

Unit III The Nervous System:
A. Man's Marvellous Control System
B. Diseases and Disorders

Unit IV The Endocrine System—A Regulator:
A. Structure and Location
B. Functions of the Glands
C. Diseases and Disorders

GRADE IX GUIDANCE

Introduction

The theme of this course is decision-making. This process involves the ability to effectively assess a situation in order to choose, from the alternatives, the most appropriate behavior.

Student understanding and use of decision-making skills should result in an increased ability to:

1. plan
2. assess one's own abilities, interests, values and personality
3. relate this assessment to vocational requirements
4. make good educational, vocational and personal decisions
5. apply the decision-making model to any choice situation
6. take responsibility for his own educational, social and personal adjustment.

RECOMMENDED TEXTS AND REFERENCES:

Decision-Making: Zingle, Safran, Hohol
Curriculum Guide For Grade IX Guidance, Department of Education.

Course Content

Unit I DECISION-MAKING

a. Levels of Awareness of the Need for Choice
   i. No mention of choice
   ii. Mention of a need to choose and possible alternatives
   iii. Mention of a choice or steps to aid in making the choice
   iv. Mention of a reason for choice
   v. Mention of the relationship of immediate to intermediate or ultimate choice.

b. Levels of Choices
   i. Immediate
   ii. Intermediate
   iii. Long Range

c. Decision-Making Pattern
   i. Select goal
   ii. Collect all pertinent information
   iii. Establish and examine alternatives and possible consequences
   iv. Select an alternative after weighing the risks against the values involved
   v. After implementation of one's choice periodic reexamination should occur.

Decision-Making—Chapters 1 and 2

Unit II FACTORS INVOLVED IN VOCATIONAL DECISIONS

a. Academic Achievement
   i. Evaluation Procedures
      —Purposes
      —Types
      —Predictions
   ii. Study Methods
   iii. Study Schedules
   iv. Relationship of achievement to decision-making.

   Decision-Making—Chapters 3, 4, 5, and 6

b. Aptitudes and Abilities
   i. Individual Differences
   ii. Theories of Aptitudes
   iii. General Ability
   iv. Special Aptitudes
   v. Special Abilities
   vi. Relationship of aptitudes and abilities to academic achievement and vocations.

   Decision-Making—Chapters 7 and 8

c. Interests
   i. Nature and role of interests
   ii. Development of interests
   iii. Measurement of interests
      —Expressed
      —Manifested
      —Inventoried
   iv. Relationship of interests to aptitudes, abilities, academic achievement and vocations.

   Decision-Making—Chapters 9 and 10

d. Values
   i. Characteristics of Values
   ii. Values and Risk-Taking
   iii. Values and the Self-Concept
   iv. Relationship of values to academic achievement, aptitudes, abilities, interests and vocations.

   Decision-Making—Chapters 11 and 12

e. Studying an Occupation
   i. Variety of occupations
   ii. Relationship between education and job preparation
   iii. Relationshop between the knowledge of oneself and one's knowledge of occupations

iv. Types of occupational information required
v. Sources of occupational information
vi. The use of occupational information in decision-making.

Decision-Making—Chapters 13, 14, and 15

Unit III THE FUTURE

a. Decision-Making Model
   i. Review
   ii. Application
   iii. Case Studies.

Decision-Making—Chapters 16 and 17

GROUP A OPTIONS

[Cultural and Practical Arts]

AGRICULTURE

Objectives:

1. By providing a rich background of knowledge and information, to develop a better understanding and appreciation of agriculture and farm life, as well as a desirable attitude towards them, as related to:
   (a) general contribution to our way of life and economy
   (b) basic control factors involved
   (c) general nature of procedures and practices involved
   (d) an awareness of the associated problems and hazards, and the importance of conservation and safety precautions
   (e) the need for improvement and maintenance of high standards
   (f) enjoyment of the rural environment

2. To develop an understanding and appreciation of, as well as desirable attitudes towards, the role of youth in rural life—now and in the future —as related to:
   (a) contributing towards, and maintaining, a satisfactory farm home
   (b) working effectively in organized groups
   (c) exercising constructive leadership, and recognizing and following worthy leadership
   (d) maintaining desirable relationships with parents, teachers, and the community
   (e) intelligently participating in worthy social and civic enterprises

3. To develop proficiency in fundamental agricultural skills and abilities as related to:
   (a) acquiring, understanding and effectively using the vocabulary and mathematics of agriculture
   (b) thinking rationally in the solution of agricultural problems
   (c) learning how to find and interpret the results of agricultural research and thence applying them to practical work in agriculture
   (d) learning how to do by doing

4. To develop strong vocational interests in agriculture, and to give aim and purpose to further occupational preparation, as related to:
   (a) an awareness and appreciation of the numerous opportunities and possibilities in agriculture and related occupations and to determine the advisability of entering the field
   (b) understanding and appreciating the need for further study and training and how to obtain it.

Course Content:

The course is organized to develop two main types of abilities on the part of the student: (1) broad understandings and overview of the leading areas of agriculture, (2) skills and managerial abilities or learning experiences provided for through the suggested subject matter content of the various units which have been organized as follows:

Unit I	Understanding and appreciating agriculture and some of the problems of rural youth—orientation
Unit II	Understanding the nature and behaviour of plants and animals and how they are used
Unit III	Selecting and organizing a program of practical work
Unit IV	Understanding the nature of climate and soil as factors influencing the growth of plants and animals
Unit V	Understanding how to grow plants indoors
Unit Vi	Understanding generally the kinds of things to grow and how to grow them
Unit VII	Understanding how to select the most satisfactory growing and producing plants and animals: A. Selecting Plants B. Selecting Animals
Unit VIII	Understanding generally how some plants and animals are being produced
Unit IX	Understanding some of the problems and hazards of agricultural production and what can be done about them
Unit X	Appreciating and considering careers in agriculture and related occupations

ART

The OBJECTIVES of the program are:

1. the development of personal satisfaction for the student through his deepening realization that art is a creative and a communicative activity;
2. the development of the student's capacity to make critical and meaningful decisions in aesthetic matters;
3. the development by the student of insight into his environment;
4. the development of an awareness of the potential and limitations of various art processes, through direct experience with materials and techniques;
5. the development of a realization of the common features which all creative activities share.

The PROGRAM consists of a series of self-contained units of uniform length, each unit containing a sequence of experiences structured around one theme or area. The term "module" is applied to such a unit, and each module should last for approximately ten weeks. Four or five modules would constitute a full year's program for one class. Accordingly, if a student were to take a three-year program, he should be able to realize all of the major objectives.

Teachers are invited to make up their own combinations of modules, depending on their particular interests and on the facilities which are available to them, from a total of thirty modules. These are classified into fifteen Level 1 modules, which provide basic experiences in a variety of areas; and fifteen Level 2 modules, which have been left to the discretion of the teacher to develop according to his needs and inclinations. Level 2 modules should be based on the material covered in the appropriate Level 1 modules.

The fifteen Level 1 Modules are classified as follows:

A. *Basic Experiences* modules, comprising *Drawing, Painting, Design, Communication Arts, Sculpture and 3-D Projects,* and *Group Design Projects.*

These modules provide the students with the basic techniques and skills of creative expression.

B. *Expanded Experiences* modules, comprising *Textile Arts, Theatre Arts, Graphics, Plastics, and Synthetic Media, Ceramics and Pottery,* and *Film as an Art Form.*

These experiences have in common the fact that extensive manipulation of media is called for if they are to be fully realized.

C. *Indirect Experiences* modules, comprising *Environmental Studies, Talking about Art,* and *Crafts and Craftsmen.*

By introducing these modules, which are of a non-studio nature (i.e. they are made up of visual/verbal presentations and discussions and do not require that students *make* anything) recognition is given to the need to provide the student with a vocabulary and a background which will enable him to discuss art more intelligently.

Two examples of junior high art programs which might be developed by the teacher are outlined below. Program A exemplifies the type of approach which a teacher might take whose interests are general and who wishes to have students cover as many areas as possible in the course of their junior high school career.

PROGRAM A

Module	1	2	3	4
Grade 7	Design	Communication Arts	Ceramics	Talking About Art
Grade 8	Drawing	Textile Arts	Painting	Sculpture
Grade 9	Graphics	Film As An Art Form	Environmental Studies	Projects In Group Design

PROGRAM B

Program B represents the type of program which might be conducted by a teacher whose interests are in a few specialized areas, or who has not facilities for experiences in ceramics, photorgraphy, or similar subjects. The figure (2) designates a Level 2 module.

Module	1	2	3	4
Grade 7	Design	Sculpture	Drawing	Graphics
Grade 8	Drawing (2)	Design (2)	Environmental Studies	Communication Arts
Grade 9	Painting	Sculpture (2)	Theatre Arts	Painting (2)

IN SUMMARY

1. A year's program consists of four or five modules.
2. Modules are approximately 8 to 10 weeks duration.
3. A student can experience 12 to 15 modules in the 3 years of junior high school.
4. There are 30 modules to choose from consisting of fifteen Level I modules and fifteen Level 2 modules.
5. The modules are to be developed by the teacher(s).
6. Level 2 modules must be built on the concepts covered in Level 1.
7. All students in an Art class need not necessarily take the same module(s) at the same time.

BASIC LIST OF REFERENCES FOR THE CLASSROOM

Art Area	Title	Author	Publisher
DRAWING	*Creative Drawing—Point and Line*	Roettger, E. and D. Klante	Scarborough: Van Nostrand Reinhold
	Learning to Draw	Kaupelis, R.	New York: Watson-Guptil
PAINTING	*Brush and Palette*	Sorgman, Mayo	Scarborough: Van Nostrand Reinhold

DESIGN	*Elements of Design*	Anderson, D.	Toronto: Holt, Rinehart & Winston, 1961
	Looking and Seeing (Series)	Rowland, Kurt	Toronto: Ginn & Co., 1968
COMMUNICATION ARTS	*Lettering, A Guide for Teachers* (Revised)	Cataldo, J. W.	Edmonton: Moyer Vico, 1965
SCULPTURE & 3-D PROJECTS	*Sculpture and Ideas for School and Camp Programs*	Andrews, Michael	Englewood Cliffs, N.J.: Prentice-Hall, *1965*
GRAPHIC ARTS	*Creative Printmaking*	Andrews, Michael	Toronto: Prentice-Hall, 1964
PLASTICS AND OTHER SYNTHETIC MEDIA	*Plastics as an Art Form*	Newman, T.	New York: Chilton
CERAMICS AND POTTERY	*Ceramics, a Potter's Handbook*	Nelson, G.	Toronto: Holt, Rinehart & Winston, 1966
ENVIRONMENTAL STUDIES	*Art: An Approach* (Workbook)	Neice, R. C.	Dubuque, Iowa: Wm. C. Brown, 1963
TALKING ABOUT ART	*Art as Image and Idea*	Feldman, E. B.	Englewood Cliffs, N.J.: Prentice-Hall, 1967.

DRAMA

PRELIMINARY STATEMENT

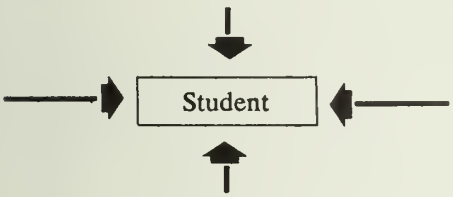
Dramatic activity involves the whole person — the development of the individual, through experience and expression of his creative self — in movement, mime, dance, improvisation or the scripted play.

All drama — and we use the term to include not only formal theatre but the study of improvisation, pantomime, film, television, media shows, dance, opera, radio plays, etc. — *can be creative* — if presented in such a way that the full resources of each individual are challenged.

The Secondary School Drama Curriculum from Grades VII to XII is predicated on the belief that drama must begin with development of the creative faculties of the student. From this base the course is built progressively in order to obtain for the student at the advanced level the broadest possible theatrical experience, for example, play production, critical viewing of theatre, film, television, film production, etc. Therefore, teachers should note that this program of studies differs from the previous one in that the program is not developed through five or six grades but through *three levels.*

Level 1

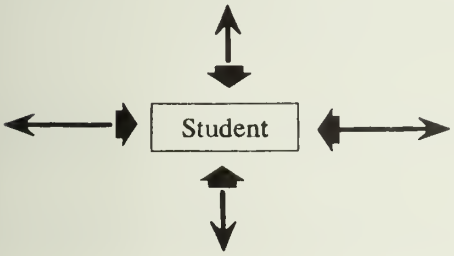
Initial — development of creative faculties



THE ARROWS INDICATE A FLOW of experiences provided by the teacher to develop personal resources and lay foundations for further creative exploration.

Level 2

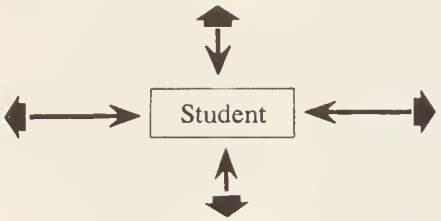
Intermediate — enrichment of creativity and a growing awareness of art form which may include the limited theatre experience.



The two-way process of student-teacher shared responsibility for further development and growing awareness of theatre form.

Level 3

Advanced — continuing development of creative faculties plus theatre experience.



The student should now be able to participate in advanced theatre form and utilize his inner resources to share a meaningful experience with an audience.

In the Junior High School and in Drama 10 it is expected that the Drama program will draw from the initial and intermediate levels.

INITIAL LEVEL

The uniqueness of each person is his individuality and in this — whether it be academic, technical, creative, or a combination of all three — he should not be compared with any other person. Drama is concerned with developing this uniqueness and helping each person to discover and to reach his own potential. A well-structured program which provides for creative experience on the part of the student, can develop within the student an awareness of the world, empathy with others, concentration, imagination, physical confidence, emotional control, expressive oral communication, self-discipline and tolerance. Drama has a unique contribution to make in the emotional and intuitive development of the student as the academic disciplines have in his intellectual development.

The objectives of the Initial Level are, therefore, *not* theatre oriented but concentrate on the development of the student's own resources.

Statement of Objectives

1. **To develop concentration**
2. **To develop sensory distinction**
3. **To obtain freedom and control in physical movement**
4. **To develop imagination**
5. **To establish foundations for further exploration in creative experience**
6. **To develop an awareness of the world today through an understanding of today's media and the responsibility of media to society.**

It is intended that some or all of the units be used, each being developed to a greater or lesser extent, to provide a variety of experience. However, it is possible for a teacher to emphasize *one* of the units and develop it over a period of a semester or year, as these units are based on the premise that teachers teach best what they know and what they feel most confident in.

Units

The activities for each of the following units are based upon the six parts of the Statement of Objectives.

Creative Speech — The dynamic and confident use of language, to communicate original and interpretive thoughts and ideas, the emphasis being on individuality rather than on the acquisition of technical skills.

Dramatic literature as a creative experience — The study of plays, radio scripts, television scripts, themes of films, etc., as a medium of communication of thoughts, feelings, ideas, *not as an academic analysis;* i.e., the play or film produced — the story told, the characters portrayed.

Media as a communicative art — A study through a variety of experiences of contemporary media (television, films, radio, newspapers, etc.) to develop an awareness and appreciation of the contribution of these changing forms in society.

Improvisational theatre — Improvisation means a situation, story, play without a script; such a situation, story, play can be told with or without words. The emphasis in this initial level is on movement improvisation rather than the extensive use of improvised dialogue, which is a more complex and advanced form of improvisation.

Linking drama with other creative arts — The intention of this unit is to offer the drama teacher a variety of approaches through utilization of aspects of other creative arts, thus emphasizing the strong interaction amongst all the arts.

Recommended Teacher Reference:

Way, Brian. *Development Through Drama.* Don Mills: Longman, 1967.

INTERMEDIATE LEVEL

Preliminary Statement

The Intermediate Level is an extension and further development of the objectives stated for the Initial Level. These objectives are:

1. To develop concentration
2. To develop sensory distinction
3. To obtain freedom and control in physical movement
4. To develop imagination
5. To establish foundations for further exploration in creative experience
6. To develop an awareness of the world today through an understanding of today's media and the responsibility of media to society.

At this level is added:

7. To channel individual creative resources into group activities and develop an awareness of dramatic form.

It is expected that the student at the Intermediate Level has had the benefit of a year or two at the Initial Level. Therefore, this program, or any part of it, will not be incorporated in Grades VII or VIII. It is also expected that the material covered in the Curriculum Guide to the Initial Level will be referred to regularly and used frequently at the Intermediate Level. It bears repeating that the total program presupposes that the dramatic experience is built on the very firm base of the student's development of his own resources. Therefore, at the

teacher's discretion, a unit or units from the Initial Level may be adapted for use with "experienced" students, if the teacher believes that they are not properly prepared to benefit from the more sophisticated outlook of the Intermediate Level. It is also possible to use material from the Intermediate Level while continuing to use the individual-centred method of the Initial Level. Teachers should not commit students to the group-centred approach until the students are ready for it.

The material in the Intermediate Level is presented through the means of three major units, each of which involves a progressive series of group projects designed to stimulate interest in various aspects of theatre art. The emphasis throughout is on an improvisational approach with each unit involving, to a greater or lesser degree, elements of the five units introduced into the Initial Level Guide.

Again, it is hoped that the teacher will make use of all three units during the course, although this is not mandatory. There *is* a shift in emphasis from individual work to group work intended to develop the student's ability to communicate, first with the group, and then with an audience. It is desirable, therefore, that, during the course of this level, much more of the student's work be presented for the class; that through class discussion the strengths and weaknesses of the work done is analysed; that some exercises will be developed to a more finished state for viewing by other classes or small assemblies; that, in short, opportunities for a closed (i.e. classmates, other classes, invited friends and parents) audience situation exist.

Outline of Units

Three areas of emphasis, which are interrelated, each incorporating the other two, are suggested. Since the Intermediate Level is a bridge between the Initial Level and the Advanced Level, the projects included within each area indicate a progression in complexity and sophistication, culminating in limited theatre experience.

Improvisational Theatre: the devising and developing of improvised movement and speech plays (with form, structure, discipline implied). This does not exclude the use of source material from literature both as stimulus and as framework; likewise, media provides both stimulus and enrichment to the improvised play.

For example:

- planned, rehearsed improvisation of situations, scenes and short plays
- planned, rehearsed dance dramas
- use of light, sets, projected and other scenery etc. to stimulate and/or enhance improvisations and dance drama
- poetry (various kinds) to create a movement, sound and light collage
- Descriptive prose (various kinds) linked with movement, sound, light, etc., to create a dramatic statement
- dramatisation of short stories
- play building from a theme, involving production as a culminating project of a short play for presentation in a closed situation.

Literature: the written and spoken work would be the core source material of this unit; *improvisation* would be incorporated as part of the process of developing an awareness of the art of theatre; *media* would act as enrichment.

For example:

- words, phrases, quotations as basis for collage of words, movement
- poetry (various kinds) in conjunction with sound, light and movement for enrichment
- improvised dramatisation on scenes from short stories
- original script writing, stimulated by or adapted from source material
- scenes, one act plays used as basis for improvisation
- use of improvisation as an approach to producing scenes and short plays
- improvisation of crowd scenes from plays, novels, etc.
- collage of poems, scenes, dramatisations, original writing to produce a short presentation as culminating project.

Media: The exploration of media (film, projections, light) to create a piece of art implies the use of improvised movement and speech; the concept of statements, and of documentary type plays provides opportunities for using source material.

For example:

- exploration of light, sound, for effect to enhance improvised movement and speech plays
- use of poetry, prose, scenes as a basis for experimentation with light, sound
- exploration into film: (1) as enhancement of improvisations
  (2) as a creative art (N.B. *not* a study of Hollywood film techniques)
- exploration with video cameras using original scripted or improvised material
- use of puppets with original scripted or improvised material
- use of film, projectors, to enhance documentary drama
- short culminating project involving improvised dialogue, dance drama, original or source material (e.g. poems, scripts) as a basis for a collage of recorded sound, light, film, projected scenery as production enrichment.

MUSIC

Objectives of the Secondary School Music Program

To help the student:

1. increase his awareness of and sensitivity to music of his own and other cultures, past and present.
2. increase his ability to understand, evaluate and become articulate about music.
3. understand the ways and means of communicating through music.
4. increase his ability to communicate through music.
5. evaluate his own musical abilities.
6. be a part of and understand the creative experience.
7. become aware of the basic importance of music in his life and in the lives of men.
8. increase his self-confidence.
9. develop a philosophy of life by providing an acquaintance with musical works which convey universal truths.

The Secondary School Music Program

Grade VII, VII and IX music courses are defined as Group A options in the *Junior-Senior High School Handbook*. The time allotment for these options is a minimum of 75 hours.

The Senior High School music program may be organized under the following headings: Music 10, 20, 30 (choral music); Music 11, 21, 31 (instrumental music); Music 12 (general music).

Where staff, facilities and enrollment permit, the students should be given the opportunity to choose from among Choral Music, General Music, or Instrumental Music as a means of satisfying the music option at each grade level in the Junior High School. Where course offerings must be limited, the interests and strengths of the students and staff should determine which alternatives will be offered. All music courses, therefore, should include the basic core of conceptual learnings in music as part of the course content as indicated below. The teacher should endeavor to help each student progress at least one level of understanding in each musical concept each year.

Guidelines for credit values and sequences of courses at the High School level are found in the *Junior-Senior High School Handbook*.

At the Junior High School level instruction should be individualized so that the students would not be prohibited from taking any of these music courses because they had not elected music the previous year. This could be achieved by having all the first year band or orchestra students in the same class even though some may be in Grade VII and some in Grade VIII, or by giving separate evaluations to the Grade VIII students who had taken music in Grade VII and those students who had not taken music in Grade VII.

Planning a Program

An effective program will take into account the backgrounds, interests, strengths, and limitations of the students in that program. Each instructor must, therefore, determine the present level of achievement of his students; the goal

for which the students should strive; the means of accomplishing the objectives and of evaluating the success of the program.

The Scope and Sequence Chart of the Conceptual Learnings included here is not intended to be prescriptive. It is a "bird's-eye view" of the elements included in a secondary music program of studies and suggested sequence presentation. For the most satisfactory progress towards the long range objectives, a balanced program should be planned for each student. The balance that should be the concern of the teacher is the balance of conceptual learnings and not one of activities. For example, a high degree of rhythmic development (see chart) with a complete neglect of harmonic or historical understanding, would signify an unbalanced program. Yet if an understanding of all of the concepts can be developed through choral rehearsals, performance and discussions about choral music, additional activities will not be necessary. It is possible for the same understanding to be achieved in a strictly instrumental program. Usually some variety of activities is necessary to allow for individual differences within any class.

SCOPE AND SEQUENCE CHART

(Summary only—details are included in Curriculum Guide to Secondary Music)

Elements of Music

Rhythm	— six levels ranging from aural awareness of and response to phrasing, pulse, rhythm and accent to development of understandings of such concepts as syncopation.
Melody	— six levels ranging from aural awareness of pitch to an understanding of descants, rounds and canons.
Harmony	— six levels ranging from aural awareness of chord changes to an introduction to two- and three-part harmonization.
Form	— six levels ranging from aural awareness of phrase length and a feeling for cadence to such forms as sonata, fugue, etc.
Tempo	— six levels ranging from aural awareness and response to changes in tempo to visual awareness of the relationship of tempo to form.
Dynamics	— six levels ranging from aural awareness of loud and soft to ways of achieving and controlling dynamics.
Tone Color	— six levels ranging from aural awareness of difference in timbre to a knowledge of instrumental effects.

Historical Perspectives

Music Yesterday	— six levels ranging from singing as amplified speech in primitive times to 'avant garde' music.
Music Today	— six levels ranging from music in today's cultures and sub-cultures to concerns of professional musicians, etc.

Related Areas

Science of Sound	— six levels ranging from aural awareness of how sounds are produced to consonance and dissonance in acoustics.

Compositional Techniques	— six levels ranging from awareness of relationship of inspiration to technique, to opportunity to write music from a given progression.
Musical Score	— six levels ranging from awareness of single line scores to full orchestral and vocal scores.
Aesthetic Consideration	— six levels ranging from awareness of three-way relationship among composer-performer and listener to an analysis of the concept of changing music styles.

In order to place this information on a chart, the statements have been summarized. These statements are explained fully in the Curriculum Guide for Secondary Music.

The Basic Core

To achieve the objectives of the music program three areas must be the concern of the teacher: the cognitive, the psychomotor and the affective. These three areas should not be separated but be considered simultaneously.

In the same way the cognitive, pyschomotor and affective remain of equal concern, the various sections of the Scope and Sequence Chart of Conceptual Learnings should be considered and planned for concurrently. None of the areas should be neglected for any appreciable period of time.

The chart is divided into three sections: Elements of Music (rhythm, melody, harmony, form, tempo, dynamics, tone color); Historical Perspectives; and Related Areas (science of sound, compositional techniques, texture, and aesthetic considerations). For each element or area several levels of development are outlined which range from simple awareness to aural and visual understanding. These levels of development do not necessarily represent grades, but are to be used to develop a balanced spiral program throughout the secondary school. It should be noted again, the chart is not meant to be prescriptive, and above all, it should not be restrictive. Classes or students able to achieve at a higher level should be encouraged to do so, but only if all areas are progressing and expressive skills and positive attitudes developing. Performance groups will probably progress more rapidly in rhythm, melody, dynamics, etc., and General Music students in historical perspectives or compositional considerations.

At all times the teacher must be aware that music is more than the sum of its parts, and that one element can not satisfactorily be separated from the others. In spite of this, the distinctive attributes which make each musical element or area different from the others have been recognized and isolated in the chart.

The Secondary Choral Program

In addition to covering the basic core, the choral program should help the student:

1. develop tone control and avoid the misuse of his singing voice.
2. become acquainted with a varied repertoire of choral literature.
3. improve his breathing, diction and ability to sing parts.
4. improve his ability to read music.

Grades VII to X — General Music Program

Students choosing general music expect a varied and exciting musical experience that is different from the Choral program, and yet not a repeat of the elementary music program. The emphasis may be on creating music, performing music on instruments and singing, or any subject or skill area of interest to the students and teacher. This in no way relieves the class of the responsibility of including the basic core of musical understandings.

The Secondary Instrumental Program

In addition to covering the basic core, the instrumental program should help the student:

1. develop tone control and articulation skills necessary for performing in various styles.
2. become acquainted with a varied repertoire of instrumental music literature, both solo and ensemble.
3. develop personal character traits of leadership, poise, and dependability.
4. improve his ability to read music.

Recommended Textbooks

The following music texts are recommended for use:

Choral Music (Junior High)

Leonhard, Charles, et al. *Discovering Music Together*, Books 7 and 8. Follett, 1967.

Wilson, Harry, et al. *Growing With Music*, Books 7 and 8. Prentice-Hall, 1966.

Cowan, Don. *Search for a New Sound*, Basic Goals in Music, Book 8. McGraw-Hill, 1967.

General Music (Junior High and Music 12)

Landis, Beth, and Lara Hoggard. *Exploring Music*, the Senior Book. Holt, Rinehart and Winston, 1968.

HOME ECONOMICS

Objectives

1. To stimulate an interest in the study of homemaking and explore possible careers related to Home Economics.
2. To help pupils explore and evaluate their interest and abilities and develop skills in this field.

Course Content

The Junior High School Home Economics Program has been planned for the three grades—VII, VIII and IX—with three levels in each of the following areas:Clothing and Textiles, Food Science, and Modern Living. In each grade one-third of the year should be spent on each of the areas.

Texts

Grade VII *Home Economics 1* — Yvonne Brand, J. M. Dent & Sons
Grade VIII *Home Economics 2* — Yvonne Brand, J. M. Dent & Sons
Grade IX *Teen Horizons* — Lewis, Banks and Banks, Macmillan Co.

CLOTHING AND TEXTILES

Level One

Concept A — *Significance of Clothing and Textiles to Individuals in Society*

Subconcept — Medium for perception, artistic expression and experience

Topic Emphasis — "What Shall I Wear?"
— Effect of line
— vertical
— horizontal
— diagonal
— curved
— straight

Concept B — *Nature of Clothing and Textiles*

Subconcepts — Textiles
— Garments
— "Learning to Sew"
— Selection, use and care of sewing equipment and sewing machines;
simple project con-construction

Topic Emphasis — "Exploring Textiles"

Concept C — *Acquisition and Use of Clothing and Textiles*

Subconcepts — Selection
— Use and care
— Responsibility of consumer

Topic Emphasis — "Shopping Sense"
— Standards for buying fabrics and garments
— Source of information
— Consumer courtesy

Level Two

Concept A — *Significance of Clothing and Textiles to Individuals in Society*

Subconcepts — Social and psychological aspects
— Medium for perception, artistic expression and experience
— Physiological aspects

Topic Emphasis — "The Meaning of Your Clothes"
— Role identification
— communication of role
— appropriate clothing for various roles
— clothing problems related to employment
— effect of appearance on job success
— "first impressions"
— The elements of design

Concept B — *Nature of Clothing and Textiles*

Subconcepts — Textiles — Garments

Topic Emphasis — "King Cotton Goes Mod" or "Cotton, Its Modern Self" — "Sew Easy" — garment construction

Concept C — *Acquisition and Use of Clothing and Textiles*

Subconcepts — Selection
— Use and care
— Responsibility of consumer

Topic Emphasis — "Shopping Sense"

Level Three

Concept A — *Significance of Clothing and Textiles to Individuals in Society*

Subconcepts — Social and psychological aspects
— Medium for perception, artistic expression and experience
— Physiological aspects

Topic Emphasis — "Seeing Yourself As Others See You"
— Principles of design

Concept B — *Nature of Clothing and Textiles*

Subconcepts — Textiles
— Garments

Topic Emphasis — "Wool Wonderland"
— "So, Sew and Sew" or "Sew Till Success"
— garment construction

Concept C — *Acquisition and Use of Clothing and Textiles*

Subconcepts — Selection
— Use and care
— Responsibility

Topic Emphasis — "Wardrobe Wisdom"
— Wardrobe planning
— factors influencing wardrobe requirements
— characteristics of a well-planned wardrobe
— clothing inventory
— planning basic garments
— use of basic colour in planning
— accessorizing
— clothing decisions
— clothing budget

FOOD SCIENCE

Note: Students, with the guidance of the teacher, should develop generalizations for each section.

Level One

Concept A — *Significance of Food*

Subconcept — As related to nutrition

Topic Emphasis — Canada's Food Guide
— Nutrient needs of different members of the family as related to health and well being

Concept B — *Nature of Food*

Subconcepts — Chemical and physical properties of food
— Factors effecting change in properties of food

Topic Emphasis — Acceptance and rejection of food based on its sensory qualities
— Food selection and preparation using a variety of methods

Concept C — *Provision of Food*

Subconcepts — Protective measures
— Management of resources

Topic Emphasis — Safety and care of foods and equipment
— Principles of good management
— Proper table setting and service
— Social graces

Level Two

Concept A — *Significance of Food*

Subconcepts — As related to cultural and socio-economic influences
— As related to nutrition

Topic Emphasis — To be aware of adequate nutrient combinations which fulfill individual needs
— meal planning

Concept B — *Nature of Food*

Subconcepts — Chemical and physical properties
— Factors effecting change in properties of food

Topic Emphasis — To be aware of individual preferences in flavour and odour of food combinations
— To develop skill in identifying and differentiating various methods of food preparation through practice

Concept C — *Provision of Food*

Subconcepts — Production of food
— Consumer food practices
— Protective measures

Topic Emphasis — To be aware of industry's influence on food products and their safety
— Importance of being a comparative shopper

Level Three

Concept A — *Significance of Food*

Subconcepts — As related to cultural and socio-economic influences
— As related to nutrition

Topic Emphasis — Factors influencing food, food choices and food habits
— To identify factors affecting varying nutrient needs of individuals
— To be aware of career opportunities
— To understand the significance of food as a socializer
— Comparison of deficient and adequate diets

Concept B — *Nature of Food*

Subconcepts — Chemical and physical properties of food
— Factors effecting change in properties of food

Topic Emphasis —	Influence of different colour and texture combinations of food	— Identification of some technological developments that bring changes in the nature of food and extend availability
Concept C —	*Provision of Food*	
Subconcepts —	Production	— Consumer practices
Topic Emphasis —	How the season affects supply, demand and cost	— Develop ability to calculate and compare food costs
Subconcepts —	Protective measures	— Management of resources
Topic Emphasis —	Safe handling of food, e.g., meat, vegetables	— Prepare nutritionally adequate meals for low, average and high cost and establish a minimum cost diet for a family

MODERN LIVING

This course is divided into three sections: Human Development and the Family, Management, and Housing.

All areas are taught in Grades VII to XII with the exception of Housing, which is not taught in Grade VII nor Grade VIII.

At the completion of each section generalizations should be developed by the students guided by the teacher.

Human Development

Level One

Concept —	*Universality of Individuals and Families*
Subconcept —	Family in world perspective — function of society — function of family
Topic Emphasis —	Comparison of the function of the family in the past and the present
Concept —	*Uniqueness of Individuals and Families*
Subconcepts —	Variations in the family
—	Individual potentialities
Topic Emphasis —	Uniqueness of individuals accounts for variations within a family in the same culture
—	Recognition of the importance of knowing oneself — thoughts, abilities, feelings, values
—	The personal concept of oneself

Concept — *Development and Socialization of the Individual*

Subconcept — Patterns of development

Topic Emphasis — Basic stages of development
— Major changes that occur in adolescence
— Growth is uneven and varies

Level Two

Concept — *Universality of Individuals and Families*

Subconcept — The family in the community

Topic Emphasis — Services in the community
— Responsibility of people
— for opportunities
— for education, maintenace of physical and mental well being
— for recreation, for protection and for development of a philosophy of life

Concept — *Uniqueness of Individuals and Families*

Subconcept — Reciprocal contributions of members and the family

Topic Emphasis — Contribution of family members
— Regulations for behaviour
— Need for economic and emotional support
— Commitment to the family
— duties
— status
— Changing function of the family

Concept — *Development and Socialization of the Individual*

Subconcepts — Self-concept
— Self-respect

Topic Emphasis — Meaning of terms and how people change
— Environmental factors
— Family and friends and their families

Level Three

Concept — *Uniqueness of Individuals and Families*

Subconcept — Norms for behaviour

Topic Emphasis — Definition of a "norm"
— How norms develop, consider several
— Norms for behaviour in North American culture
— Compare with other cultures
— Contrast norms and law
— Recognition of the function of the family in regulating behaviour

Concept — *Development and Socialization of the Individual*

Subconcept — Socialization and dating

Topic Emphasis — The meaning of socialization and the processes involved
— How the environment influences
— Favourable and unfavourable conditions affecting the young child, the adolescent, the adult
— Recognition that dating is a developmental process
— Comparison of needs and relationships as fulfillment for self
— How inter-personal skills develop
— Development of personal standards
— Importance of adequate problem solving in dating relationships

Management

Level One

Concept — *Managerial Processes*

Subconcept — Organization of activities

Topic Emphasis — Need to arrange heights of working surfaces to meet needs of students
— Management for efficiency in the Home Economics room

Concept — *Effective Elements in Management*

Subconcepts — Resources and their utilization
— Values, goals, standards

Topic Emphasis — Availability and or scarcity of resources affect choice
— Meaning of values, goals, standards
— Effect on meeting needs or causing risks
— Organization for activities in the Home Economics room
— Value of routine procedures and coordinating activities in school and home

Level Two

Concept — *Managerial Processes*

Subconcept — Organization of activities

Topic Emphasis — The meaning of management
— Responsibility of the whole family for good management
— Home management
— Management in action

Concept — *Effective Elements in Management*

Subconcepts — Resources and their utilization

— Values, goals and standards

Topic Emphasis — Meaning of goal, value resource and their relationship

— How to manage resources

— Management in action

— practical activities using correct techniques

Level Three

Concept — *Managerial Processes*

Subconcept — Decision making

Topic Emphasis — Relationshop between planning and implementation of a plan may require new decisions, substitutions, new learnings

— Management in action

— in school and home

Concept — *Effective Elements in Management*

Subconcepts — Resources and their utilization

— Values, goals and standards

Topic Emphasis — Human and non-human resources

— Resources are shared

— May have alternate uses

— Analyze relationship between values, goals and standards

— Differentiate between needs and wants

— Compare standards of individuals

— Compare flexible and inflexible standards

Housing

Level Three (Note: Housing is not taught in Grades VII and VIII.)

Concept — *Influence of Housing on People*

Subconcepts — Psychological and physical

— Social

Topic Emphasis — The setting provided by the home for physical and emotional development

— Space organization, structural design and location affect housekeeping and activities

— Storage facilities and their effect on family living

Concept — *Factors Influencing the Form and Use of Housing*

Subconcept — Human

Topic Emphasis — The effect of housing in satisfying basic physiological, psychological and social needs

— Human factors which influence the form and use of housing and furnishings

— individual needs, values, attitudes, abilities, skills and resources

Concept — *Processes in Providing Housing*

Subconcept — Designing

Topic Emphasis — Meaning of design: The process of organizing the basic elements of line, form, shape, texture and colour

— Art principles

LANGUAGES OTHER THAN ENGLISH

INTRODUCTORY STATEMENT

A language other than English may be implemented in the junior high school grades, either as a Group A option or as a Group B option. As a Group B option, it should respect the principles underlying this classification as outlined in the *Junior-Senior High School Handbook*. The implementation of a Group B option will vary from school to school dependent upon the personnel and material resources available.

However, when offered to interested students as a Group A option, its effectiveness in achieving significant proficiency in language learning by these students will depend upon, among other factors, the provision of ample time, frequently scheduled instructional periods and planned articulation. A sequential program, beginning at either the elementary school or at the junior high school and continuing on to senior high school, is a prerequisite to any real proficiency in the language studied.

For students in Alberta schools, progress in language development is suggested for each of three LEVELS of language acquisition. A LEVEL of language proficiency is defined as a set of behaviors which includes knowledge of language content and performance in terms of linguistic and attitudinal change. Although a LEVEL may be equated in a general way with a "year" or "years" of learning, or even with "grades", the term, as used in the PROGRAM OF STUDIES, indicates a student's level of linguistic development rather than his year of study or grade placement.

LEVEL ONE is defined as an *initial* learning experience in a second language. Students may complete LEVEL ONE or more at the end of a three-year junior high program or its equivalent. Students who begin their study of a second language in senior high school are expected to complete LEVEL ONE at the end of one year of language study. Students who have studied a language for one year only in senior high school, however, cannot be expected to have attained the same degree of fluency as students who have been exposed to the language for longer periods of time in the junior high school.

LEVEL TWO is defined as an *intermediate* learning experience in a second language. Students will normally complete LEVEL TWO at the end of two sequential years of senior high school study following the successful completion of LEVEL ONE.

LEVEL THREE then becomes an *advanced* learning experience in which students are encouraged to increase their language proficiency and cultural understanding. Students will pursue the study of a second language at this LEVEL after successfully completing LEVEL TWO.

Curriculum guides have been prepared for French, German and Ukrainian, in order to help school systems which choose to offer a second language in the junior high grades to plan a sequential program of learning activities. The curriculum outlines in these documents suggest language content and expected linguistic and attitudinal behaviors for each LEVEL of language learning.

Students who have successfully completed a second language program in the junior high school should be placed in a senior high school program which takes into account both achievement and the amount of time during which the

Suggested Expectations For Ukrainian At The End of Level One

The curricular outline included on pages 4 - 15 of the curriculum guide* identifies the language content to which students will be exposed during LEVEL ONE, and it suggests the linguistic and attitudinal behaviours expected of students at the end of this level of language learning.

LEVEL ONE is considered to be an *intial* experience in learning the Ukrainian language and it may occur at any grade(s) of the student's career in the secondary school. The attainment of LEVEL ONE proficiency may occur in a variety of ways, such as the successful completion of:

a. a three-year program in the junior high school,
b. a two-year program in the junior high school, equivalent in time exposure to three years of study,
c. a one-year program in the senior high school, during which students learn the concepts and develop the skills and attitudes suggested for LEVEL ONE.

The successful completion of LEVEL ONE by a student should result in his subsequent placement in a LEVEL TWO program, i.e. Ukrainian 20.

Ukrainian as a Second Language, Tentative Curriculum Guide, Levels 1, 2 and 3 (Secondary) 1974.

RECOMMENDED INSTRUCTIONAL MATERIALS

The language content, along with the linguistic and attitudinal behaviors outlined in LEVEL ONE in each of the curriculum guides for French, German and Ukrainian contain the basic core suggested for an initial program in these languages. Teachers are advised to examine the instructional materials and select structures, concepts and expressions which correspond to the Program of Studies and curriculum guides. As lessons vary in substance, it is important to avoid a materials-centered, page by page, lesson by lesson coverage.

The following instructional materials are recommended for the junior high school portion of a six-year program beginning in Grade 7.

FRENCH AS A SECOND LANGUAGE

* A-LM Level One (Revised Edition)

or

* Ecouter et Parler (Revised Edition, 1970)

or

Le Français International, deuxième version (Books 1, 2 and 3)

or

* Voix et Images de France

GERMAN AS A SECOND LANGUAGE

A-LM Level One (Second Edition)

or

Verstehen und Sprechen (1970)

UKRAINIAN AS A SECOND LANGUAGE

Ukrainian by the Audio-Visual Method

ADDITIONAL RESOURCES

In order to encourage students to meet the expectations suggested for LEVEL ONE, teachers are invited to select and adapt from the instructional materials listed above, and to provide for a wide variety of supplementary resource materials. A selection of resource materials for French, German and Ukrainian has been identified in the following publications.

Resource Materials — A Listing Prepared for Teachers of French as a Second Language (Secondary) 1974.

Resource Materials — A Listing Prepared for Teachers of German as a Second Language (Secondary) 1974.

Resource Materials — A Listing Prepared for Teachers of Ukrainian as a Second Language (Secondary) 1975.

* Please note that A-LM French, Ecouter et Parler, and Voix et Images de France will be phased out in three years.

INDUSTRIAL ARTS

Introduction

Industrial arts is a subject area which introduces students, both boys and girls, through its content and activities, to all aspects of productive society.

Objectives

1. To provide exploratory experiences in various technologies prevalent in productive society.
2. To provide a synthesizing environment for students to apply their academic knowledge in the solution of practical problems.
3. To provide a supplementary guidance function by introducing the students to the multiplicity and interrelationship of educational and occupational opportunities.
4. To provide an environment which stimulates the individuals to discover and develop their interests and talents.
5. To develop attitudes of safety with a respect for safe working habits and practices in the use of tools, equipment and materials.
6. To develop attitudes of personal and social responsibility.
7. To have the students develop an organized conceptual frame of reference interrelating the knowledge of the various technologies prevalent in a productive society.

Safety

Every Industrial Arts laboratory must have an effective safety program. The teacher must be vigilant to provide adequate and continuous supervision so that safe practices are followed in all laboratory activities.

Fields of Study

Each industrial arts student must explore no fewer than three different units of approximately equal length during any one year and such units cannot be repeated.

1. Power

2. Materials
   a. Woods
   b. Metals
   c. Plastics
   d. Earths

3. Electronics
   a. Electricity
   b. Electronics-Computer

4. Graphics
   a. Visual Communications
   b. Graphic Communications

5. Industrial Crafts (Choose one only.)
   a. Leather
   b. Lapidary
   c. Art Metal

6. Developmental Research

Suggested Organization

1. Three-Year Program

Grade VII	Grade VIII	Grade IX
Electricity	Visual Communications	Electronics
Plastics	Woods	Power
Earths	Metals	Graphic Communications

2. Two-Year Program

First Year	Second Year
Woods	Electricity-Electronics-Computer
Metals	Power
Plastics	Visual Communications
Earths	Graphic Communications

(A Developmental Research and/or Craft unit may be used as a "floater" for enrichment.)

CONTENT

POWER MECHANICS

A. Power Sources
   1. Direct Mechanical Converters
   2. External Combustion Converters
   3. Internal Combustion Converters (heat engines)
   4. Electrical Converters

B. Power Systems
   1. Two-Stroke Cycle Engines
   2. Four-Stroke Cycle Engines
   3. Comparative Test Two-Stroke Cycle and Four-Stroke Cycle Engines
   4. Electric Motors (Optional)

C. Transmission
   1. Mechanical Systems
   2. Pneumatic and/or 3. Hydraulic Systems
   4. Fluidics Systems
   5. Electrical Transmission Systems

D. Educational and Occupational Projections
   1. Guidance Information

MATERIALS

The following major topics to be developed in the Material areas of: Woods, Metals, Plastics, Earths.

A. The Material and Testing
   1. Development of Natural and Man-Made Materials
   2. Sources of Materials
   3. Identification of Materials
   4. Testing of Materials

B. Measurement and Layout

C. Shaping
   1. Cutting
   2. Shaping
   3. Molding
   4. Forming
   5. Casting

D. Fabrication
   1. Mechanical
   2. Adhesion
   3. Cohesion
   4. Comparative Testing

E. Finishing
   1. Natural
   2. Coatings
   3. Chemical
   4. Mechanical
   5. Heat

F. Educational and Occupational Projections
   1. Guidance Information

ELECTRICITY

A. Uses of Electricity
   1. Heating
   2. Lighting
   3. Electric Motors

B. Safety
   1. Machines
   2. Clothing

C. Sources of Electricity
   1. Friction
   2. Generator
   3. Crystal Cartridge
   4. Solar Cell
   5. Thermocouple
   6. Batteries
   7. Thermo-Electric Generator
   8. Fuel Cells

D. Controlling Electrical Energy
   1. The Circuit
   2. Series Circuits
   3. Parallel Circuits
   4. Telephone Circuits
   5. Telegraph Circuits
   6. Teletype Circuits

E. Educational and Occupational Projections
   1. Guidance Information

ELECTRONICS

A. Electronic Systems for Reception and Transmission
   1. Superheterodyne Radio
   2. Transmitters

B. Electronic Systems for Amplification
   1. Phonograph System
   2. Public Address System
   3. Video System (Optional)

C. Electronic Systems for Calculators
   1. Computer

D. Educational and Occupational Projections
   1. Guidance Information

VISUAL COMMUNICATIONS

A. Graphics
   1. History and Overview
   2. Materials

B. Light-Sensitive Materials
   1. Copying Processes
   2. Photographic Processes
   3. Film Processing

C. Technical Design and Illustration
   1. Pictorial Representation
   2. Multi-View
   3. Drawing Interpretation
   4. Instrument Manipulation
   5. Composition

D. Educational and Occupational Projections
   1. Guidance Information

GRAPHIC COMMUNICATIONS

Section A

A. Graphics
   1. History and Overview
   2. Materials

B. Offset Lithography
   1. Offset Reproduction
   2. Master Preparation
   3. Design

C. Photo-Offset Process
   1. Photo-Offset Process
   2. Composition
   3. Process Camera Simulation
   4. Masking and Stripping
   5. Platemaking
   6. Reproduction
   7. Bindery
   8. Guidance

D. Light Sensitive Materials
   1. Composition Through Paste Make-Up
   2. Positive Masters
   3. Reversal Film
   4. Orthochromatic Film
   5. Line Color Separation
   6. Projection Control in Enlarging
   7. Half-Tones

E. Educational and Occupational Projections
   1. Guidance Information

Section B — for use by schools that have not yet made the transition to offset equipment.

A. Typography
   1. Printing Methods
   2. Materials—Manufacture
   3. Printing Process

B. Rubber Stamp Process
   1. Rubber Stamp Production

C. Show Card Printer
   1. Show Card Production

D. Educational and Occupational Projections
   1. Guidance Information

INDUSTRIAL CRAFTS

The following major topics to be developed in the Industrial Craft areas of Leather, Lapidary and Art Metal.

A. The Material and Testing
   1. Development
   2. Sources of Materials
   3. Identification
   4. Testing for Appropriate Use

B. Measurement and Layout

C. Shaping and Fabrication
   1. Cutting
   2. Shaping
   3. Molding
   4. Forming
   5. Casting

D. Fabrication
   1. Mechanical
   2. Adhesion
   3. Cohesion

E. Finishing
   1. Natural
   2. Coatings
   3. Chemical
   4. Mechanical
   5. Heat

F. Educational and Occupational Projections
   1. Guidance Information

DEVELOPMENTAL RESEARCH

The unit on Developmental Research provides the industrial arts teacher with a block of time to develop new curriculum materials which are unique to industrial arts.

THE TEACHER MUST DEFINE THE CONTENT OF THIS UNIT AND GET THE APPROVAL OF THE PROVINCIAL SUPERVISOR OF INDUSTRIAL ARTS BEFORE INTRODUCING IT TO HIS STUDENTS.

LANGUAGES OTHER THAN ENGLISH

INTRODUCTORY STATEMENT

A language other than English may be implemented in the junior high school grades, either as a Group A option or as a Group B option. As a Group B option, it should respect the principles underlying this classification as outlined in the *Junior-Senior High School Handbook*. The implementation of a Group B option will vary from school to school dependent upon the personnel and material resources available.

However, when offered to interested students as a Group A option, its effectiveness in achieving significant proficiency in language learning by these students will depend upon, among other factors, the provision of ample time, frequently scheduled instructional periods and planned articulation. A sequential program, beginning at either the elementary school or at the junior high school and continuing on to senior high school, is a prerequisite to any real proficiency in the language studied.

For students in Alberta schools, progress in language development is suggested for each of three LEVELS of language acquisition. A LEVEL of language proficiency is defined as a set of behaviours which includes knowledge of language content and performance in terms of linguistic and attitudinal change. Although a LEVEL may be equated in a general way with a "year" or "years" of learning, or even with "grades", the term, as used in the PROGRAM OF STUDIES, indicates a student's level of linguistic development rather than his year of study or grade placement.

LEVEL ONE is defined as an *initial* learning experience in a second language. Students may complete LEVEL ONE or more at the end of a three-year junior high program or its equivalent. Students who begin their study of a second language in senior high school are expected to complete LEVEL ONE at the end of one year of language study. Students who have studied a language for one year only in senior high school, however, cannot be expected to have attained the same degree of fluency as students who have been exposed to the language for longer periods of time in the junior high school.

LEVEL TWO is defined as an *intermediate* learning experience in a second language. Students will normally complete LEVEL TWO at the end of two sequential years of senior high school study following the successful completion of LEVEL ONE.

LEVEL THREE then becomes an *advanced* learning experience in which students are encouraged to increase their language proficiency and cultural understanding. Students will pursue the study of a second language at this LEVEL after successfully completing LEVEL TWO.

Curriculum guides have been prepared for French, German and Ukrainian, in order to help school systems which choose to offer a second language in the junior high grades to plan a sequential program of learning activities. The curriculum outlines in these documents suggest language content and expected linguistic and attitudinal behaviours for each LEVEL of language learning.

Students who have successfully completed a second language program in the junior high school should be placed in a senior high school program which takes into account both achievement and the amount of time during which the

student was exposed to the target language. In many schools it is suggested that students be placed in French 20, German 20 or Ukrainian 20 if the minimum requirements of LEVEL ONE have been satisfied in the junior high grades. For other schools, where students have been exposed to longer sequences of French language learning, it is strongly recommended that students register in French 11 when it is offered.

GOALS AND OBJECTIVES

In the study of modern languages the long range goals are cultural understanding and effective communication. Achievement of these goals exclusively in a school setting is unrealistic. The development of cultural understanding and linguistic proficiency is a complex process involving a variety of language experiences and exposure to the culture of the people whose language is being studied. It is desirable, however, that in a school program some progress be made towards realization of the more specific goals outlined below.

A. CULTURAL OBJECTIVES

The student should be able:

1. To understand the values and behaviour patterns of the people whose language is being studied.
2. To appreciate the contributions made to civilization by these people.

B. LINGUISTIC OBJECTIVES

1. To understand the structure and functioning of the language being studied.
2. To apply this knowledge to the acquisition of skills needed:
   (a) To understand the language when spoken at a normal speed on a subject within the range of a student's linguistic experience and areas of interest.
   (b) To speak the language well enough to communicate in it within the limitations mentioned above.
   (c) To read in the target language with direct understanding for information and enjoyment.
   (d) To write with reasonable ease anything he can say in the language.

FRENCH AS A SECOND LANGUAGE

Suggested Expections For French At The End of Level One

The curriculum outline included on pages 8 - 27 of the curriculum guide* identifies the language content to which students will be exposed during LEVEL

**French as a Second Language*, Tentative Curruculum Guide, Levels 1, 2 and 3 (Secondary) 1974.

ONE, and it suggests the linguistic and attitudinal behaviours expected of students at the end of this level of language learning.

LEVEL ONE is considered to be an *initial* experience in learning the French language and it may occur at any grade(s) of the student's career in the secondary school. The attainment of LEVEL ONE proficiency may occur in a variety of ways, such as the successful completion of:

a. a three-year program in the junior high school,
b. a two-year program in the junior high school, equivalent in time exposure to three years of study,
c. a one-year program in the senior high school, during which students learn the concepts and develop the skills and attitudes suggested for LEVEL ONE.

The successful completion of LEVEL ONE by a student should result in his subsequent placement in a LEVEL TWO program, i.e. French 20. **In schools where the students have been exposed to more than the core content required of LEVEL ONE, it is suggested that students register in French 11 when it is offered.**

GERMAN AS A SECOND LANGUAGE

Suggested Expectations For German At The End of Level One

The curricular outline included on pages 7 - 16 of the curriculum guide* identifies the language content to which students will be exposed during LEVEL ONE, and it suggests the linguistic and attitudinal behaviours expected of students at the end of this level of language learning.

LEVEL ONE is considered to be an *initial* experience in learning the German language and it may occur at any grade(s) of the student's career in the secondary school. The attainment of LEVEL ONE proficiency may occur in a variety of ways, such as the successful completion of:

a. a three-year program in the junior high school,
b. a two-year program in the junior high school, equivalent in time exposure to three years of study,
c. a one-year program in the senior high school, during which students learn the concepts and develop the skills and attitudes suggested for LEVEL ONE.

The successful completion of LEVEL ONE by a student should result in his subsequent placement in a LEVEL TWO program, i.e. German 20.

German as a Second Language, Tentative Curriculum Guide, Levels 1, 2 and 3 (Secondary) 1974.

Suggested Expectations For Ukrainian At The End of Level One

The curricular outline included on pages 4 - 15 of the curriculum guide* identifies the language content to which students will be exposed during LEVEL ONE, and it suggests the linguistic and attitudinal behaviours expected of students at the end of this level of language learning.

LEVEL ONE is considered to be an *intial* experience in learning the Ukrainian language and it may occur at any grade(s) of the student's career in the secondary school. The attainment of LEVEL ONE proficiency may occur in a variety of ways, such as the successful completion of:

a. a three-year program in the junior high school,
b. a two-year program in the junior high school, equivalent in time exposure to three years of study,
c. a one-year program in the senior high school, during which students learn the concepts and develop the skills and attitudes suggested for LEVEL ONE.

The successful completion of LEVEL ONE by a student should result in his subsequent placement in a LEVEL TWO program, i.e. Ukrainian 20.

*_Ukrainian as a Second Language_, Tentative Curriculum Guide, Levels 1, 2 and 3 (Secondary) 1974.

RECOMMENDED INSTRUCTIONAL MATERIALS

The language content, along with the linguistic and attitudinal behaviours outlined in LEVEL ONE in each of the curriculum guides for French, German and Ukrainian contain the basic core suggested for an *initial* program in these languages. The language content core, for the most part is found within the units and lessons suggested below for each of the recommended instructional materials. In schools where students continue into French 11 and French 21, it is recommended that students be exposed to more than this suggested core, and that they be given opportunities to develop greater fluency in French than if they were to continue with French 20 and French 30.

	Suggested Content
FRENCH AS A SECOND LANGUAGE	
A-LM Level One (RevisedEdition)	Units 1 - 9
or	
Ecouter et Parler (Revised Edition, 1970)	Units 1 - 8
or	
Voix et Images de France	Lessons 1 - 10
GERMAN AS A SECOND LANGUAGE	
A-LM Level One (Second Edition)	Units 1 - 9
or	
Verstehen und Sprechen (1970)	Lessons 1 - 12
UKRAINIAN AS A SECOND LANGUAGE	
Ukrainian by the Audio-Visual Method	Lessons 1 - 14

ADDITIONAL RESOURCES

In order to encourage students to meet the expectations suggested for LEVEL ONE, teachers are invited to select and adapt from the instructional materials listed above, and to provide for a wide variety of supplementary resource materials. A selection of resource materials for French, German and Ukrainian has been identified in the following publications:

Resource Materials — A Listing Prepared for Teachers of French as a Second Language (Secondary) 1974.

Resource Materials — A Listing Prepared for Teachers of German as a Second Language (Secondary) 1974.

Resource Materials — A Listing Prepared for Teachers of Ukrainian as a Second Language (Secondary) 1975.

LATIN

Objectives

The specific objective of a program in any second language is to enable the learner to acquire a proficiency in a language other than his tongue. For the study of Latin, this takes the form of gaining proficiency in:

(a) Reading and understanding Latin.

(b) Learning more about his own language.

(c) Learning about the ancient world and its values.

(d) Comparing and contrasting his own values with those of the ancient world.

(e) Appreciating the immense contribution of Latin to the English vocabulary.

A. SUGGESTED COURSE CONTENT IN THE JUNIOR HIGH SCHOOL GRADES

Text

Page and Beckett. *Gateway to Latin, I and II.* At the end of the Junior High School Latin program it is suggested that the students complete all of *Gateway to Latin I* and the first sixteen chapters of *Gateway to Latin II.*

B. SUGGESTED COURSE CONTENT IN THE SENIOR HIGH SCHOOL GRADES

Latin 10

Text

Breslove and Hooper. *Latin for Canadian Schools.*

Suggested Course Content

Lessons 1 - 27 inclusive; the last exercises in each lesson need not be emphasized, but knowledge is essential of: the first three declensions of nouns; the cases of nouns and their functions; the three declensions of adjectives; the four conjugations in the active in all tenses of the indicative, the imperative, the infinitive; questions; connectives, subordinate clause with ubi, antequam, priusquam, simulat que, cum primum, dum, si nis and cum; prepositions; place and time expressions.

Latin 20

Text

Breslove and Hooper. *Latin For Canadian Schools.*

Suggested Course Content

Lessons 28 - 55 inclusive; the last exercises in each chapter need not be emphasized. Derivative studies should be done orally. Relative, interrogative, demonstrative, reflexive and intensive pronouns should be taught for reading recognition and use rather than have the students memorize the paradigms.

Latin 30

Text

Breslove and Hooper. *Latin for Canadian Schools.*

Suggested Course Content

Lessons 56 - 78 inclusive. The English to Latin should be reduced to a minimum; omit recall and grammatical work on adverbs of place, compounds of fero, and subordinate clauses in indirect discourse.

NOTE:

The Breslove and Hooper text is satisfactory for studying the core material in grammar, but in order to allow flexibility in the Latin Program, it is suggested that teachers be encouragec to utilize a large number of resource materials which emphasize the development of reading comprehension. In addition to the text, Latin readings in the following are examples recommended for this purpose, but this list is not exclusive. Of these, only *Selected Latin Readings* by Taylor and Prentice may be obtained through the School Book Branch. The others are available through the publishers only.

Selected Latin Readings — B. C. Taylor and K. E. Prentice. Dent.

Using Latin — J. Gunmere. Longman.

Lingua Latina — H. O. Oerberg. Nature Method Language Institute (110 East 42 Street, New York) (Vol. I and II).

Civis Romanus — J. M. Cobban and R.Colebourne. Methuen.

Sodales Duo — A. O. Nash-Williams. Cambridge University Press.

First Year Latin — C. Jenny. Macmillan.

Romani Apud Se — G. C. Lightfoot. Macmillan.

Elementary Latin Translation Book — Rev. A. E. Hallard. Copp Clark.

Tironibus — G. M. Lyne. Edward Arnold, London, England.

Balbus — G. M. Lyne. Edward Arnold, London, England.

First Reading Book — G. M. Lyne. Edward Arnold, London, England.

Collins' Latin Dictionary — Collins, Toronto.

NOTE:

1. Students who have successfully completed the minimum content suggested for the Junior High School Latin program should register in Latin 20.
2. Teachers who are recommending students for Latin 20 should ensure that the suggested course content for Latin 10 as outlined in the Program of Studies has been completed.

TYPEWRITING

One year of instruction should be sufficient to develop the objectives of junior high school typewriting. It is strongly recommended that the course be offered at the Grade IX level.

Specific Objectives

1. To acquire the proper techniques of typewriting and to become familiar with basic machine operations.
2. To become familiar with common typewriting procedures.
3. To apply typewriting skill in the production of jobs for school and personal use.
4. To develop good work habits.
5. To produce typescript with acceptable standards of accuracy.

Recommended Texts

McConnell & Darnell. *BUILDING TYPING SKILLS*. Second Edition. McGraw-Hill Ryerson, 1973.

Wanous et al. *PERSONAL TYPEWRITING*. Canadian Edition. Gage Educational Publishing, 1973.

Course Content

1. Development of typewriting techniques
2. Familiarity with basic machine operations
3. Common typewriting procedures
4. Personal-use applications
5. Composition at the typewriter
6. Development of good work habits
7. Production of typescript with reasonable speed and accuracy.

INTRODUCTION

This Program of Studies contains an outline content of each course in the Junior High School together with a list of the recommended texts and approved secondary references. Regulations with respect to the credit value of courses, examinations and other matters relating to the operation of the high school appear in the current issue of the *Junior-Senior High School Handbook*.

Teachers who want suggestions concerning methods of handling a given course will find them in the related curriculum guide which may be obtained through the office of their superintendent, or purchased from the Printing and Stationery Branch, Department of Education.

The assistance of committees in preparing the outlines in the various subjects is gratefully acknowledged.

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SCIENCE

OBJECTIVES OF SECONDARY SCHOOL SCIENCE FOR ALBERTA

The learning of science as an area of human endeavour, should provide the student with a scientific literacy which enables him to assume an active and useful role as a citizen in a democractic society. It may be assumed that this literacy is best achieved by considering the individual needs of students and through independent study and learning.

The objectives of Secondary School Science are:

1. To promote an understanding of the role that science has had in the development of societies:
   a. history and philosophy of science as part of human history and philosophy
   b. interaction of science and technology
   c. effect of science on health, population growth and distribution, development of resources, communication and transportation, etc.
2. To promote an awareness of the humanistic implications of science:
   a. moral and ethical problems in the use and misuse of science
   b. science for leisure-time activities
3. To develop a critical understanding of those current social problems which have a significant scientific component in terms of their cause and/or their solution:
   a. depletion of natural resources
   b. pollution of water and air
   c. overpopulation
   d. improper use of chemicals
   e. science for the consumer
4. To promote understanding of and development of skill in the methods used by scientists:
   a. processes in scientific inquiry such as observing, hypothesizing, classifying, experimenting and interpreting data
   b. intellectual abilities such as intuition, rational thinking, creativity, and critical thinking
   c. skills such as manipulation of materials, communication, solving problems in groups, and leadership
5. To promote assimilation of scientific knowledge:
   a. emphasis on fundamental ideas
   b. relevance of scientific knowledge through inclusion of practical applications
   c. application of mathematics in science
   d. inter-relationships between the sciences
   e. open-endedness of science and the tentativeness of scientific knowledge.
6. To develop attitudes, interests, values, appreciations, and adjustments similar to those exhibited by scientists at work.
7. To contribute to the development of vocational knowledge and skill:
   a. science as a vocation
   b. science as background to technical, professional and other vocations.

GRADE SEVEN

Prescribed References:

Carter, J. L. et al, *Life Science: A Problem Solving Approach.* Scarborough: Ginn & Co., 1977

Smallwood, W. L., *Challenges to Science: Life Science.* Scarborough: McGraw-Hill, 1976

Objectives: After participating in the activities and completing the assignments associated with this course, the student should be able to:

7.1 Demonstrate a knowledge of and be able to discuss the identified major concepts and their subconcepts within the context of a study of life science. These major concepts are:

7.1.1 All sets of objects including living things may be classified into groups having common characteristics.

7.1.2 Cells are the unit of structure and function of most living things.

7.1.3 Living things carry on certain fundamental processes to sustain and perpetuate life.

7.1.4 All living things interact with and are interdependent upon each other and their environment.

7.2 Acquire such investigative skills associated with science as:
— Observing with all the senses
— Classifying related objects or ideas
— Quantifying measured data
— Manipulating data to identify the patterns
— Identifying problems clearly so that the variables may be controlled or manipulated
— Interpreting data, making inferences leading to hypotheses and predicting future behavior.

7.3 Identify and discuss the limitations of experimental data in terms of the underlying assumptions and the identified problem.

7.4 Assume a responsibility for keeping the workspace neat and tidy by practicing safe, and careful, work habits.

7.5 Recognize and be able to cite examples of the contributions made by such historical figures as Robert Hooke, Louis Pasteur.

7.6 Investigate factors related to the wise use of renewable resources and man's impact upon the environment.

Concepts To Be Developed

7.1 All sets of objects including living things may be classified into groups having common characteristics.

Subconcepts

1. Classification makes thinking about a large number of things simpler and easier.
   — Within large groups, members share some common characteristics; within smaller subgroups, members share a greater number of common characteristics.

2. An international system of classifying living things has been developed to facilitate the organization and exchange of knowledge of living things.
   — Living things may be classified as protist, plant or animal.
3. A simple key may be used to facilitate identification of organisms.

7.2 Cells are the unit of structure and function of most living things.

1. The techniques and tools of scientists aid in observing things (e.g. microscopes, balances, etc.)
2. Plant and animal cells share many common characteristics.
3. Cells live independently or in groups.
   a. Single celled organisms perform all the functions necessary for life.
   b. Some cells in multi-cellular organisms are specialized to carry out specific functions.

7.3 Living things carry on certain fundamental processes in order to sustain and perpetuate life.

1. Organisms require nutrients for energy.
   a. Green plants are the primary producers of food (photosynthesis).
   b. Digestion is the process of breaking down food.
   c. There is a chain of food and energy from primary producers to consumers to decomposers.
2. All living things obtain their energy from *respiration*.
   a. Respiration is the oxidation of sugar in controlled conditions.
   b. Organisms obtain oxygen from their environment in a variety of ways.
3. Food products and gases must be circulated to all cells throughout an organism (circulation).
   a. Cells receive nourishment and eliminate waste through the process of diffusion.
   b. More complex organisms show need for a more specialized circulatory system.
4. Organisms eliminate wastes to their environment (egestion and excretion).
5. *Growth* of an organism may result in change in structure or proportion, or an increase in size.
6. Living things react to their internal and external environment (sensitivity).
   a. Different species may have different ways of receiving and responding to stimuli.
   b. Living things differ in their response to the environment (adaptation).

7. To ensure survival of the species, living organisms must *reproduce*.
   a. Some organisms reproduce sexually, some asexually, and some by both means.
   b. An offspring inherits certain characteristics from its parents.
   c. There are many variations within a population.
   d. Living things have developed a variety of structural and behavioral adaptations to ensure reproduction.

7.4 All living things interact with and are interdependent upon each other and their environment.

1. The biosphere is the region in which life on our planet is possible.
2. Eco-systems are units in the biosphere in which living and non-living things interact.
3. Plants and animals living and interacting in any eco-system are known as a community.
4. The members of each community show adaptations which are necessary for survival in the community.
   a. Some organisms are specific to certain communities (distribution).
   b. Some organisms may exist in more than one community (tolerance).
5. An organism is the product of both heredity and environment.
6. The environment and the distribution of organisms are in a state of continual change.
   a. Nature constantly re-cycles materials.
   b. Changes may take place over an extended period of time.
7. Man's influence on the environment can be directed constructively.
   a. Man's influence may increase the rate of change with beneficial or harmful results to the environment.
   b. Man commands the use of a great supply of energy to change the environment to his liking.
   c. Man's production and use of energy causes pollution.
   d. The preservation of man's biological resources depends on an awareness and the positive action of each individual.

GRADE EIGHT

Prescribed References:

Heller, R. L. et al, *Challenges to Science: Earth Science.* Scarborough: McGraw-Hill, 1976

Jackson, J. H. and E. D. Evans, *Spaceship Earth: Earth Science.* Markham: Houghton-Mifflin, 1976

Objectives: After participating in the activities and completing the assignments associated with this course, the student should be able to:

8.1 Demonstrate a knowledge of and be able to discuss the identified major concepts and their associated subconcepts within the context of a study of the earth. These major concepts are:

- 8.1.1 A perspective of the position and motion of the Earth in space is gained by celestial observations and measurements.
- 8.1.2 Various theories attempt to explain the origin of the solar system and the universe.
- 8.1.3 Matter everywhere in the universe seems to be composed of the same elements that are found in the Earth.
- 8.1.4 The Sun is a typical star.
- 8.1.5 The surface of the Earth and its inhabitants are surrounded by an atmosphere of air.
- 8.1.6 Local conditions in the atmosphere are referred to as weather.
- 8.1.7 Weather conditions as recorded over a long period of time define the climate of a region.
- 8.1.8 Weather modification has occurred through man's activities.
- 8.1.9 Water is an important part of the Earth's surface.
- 8.1.10 The crust of the Earth is constantly being changed.
- 8.1.11 The crust of the Earth is formed of rocks.
- 8.1.12 Evidence for determining the past history of the Earth comes from a study of the crust.

8.2 Demonstrate increasing competence in the investigative skills associated with science:
— Observing with all of the senses
— Manipulating technical instruments
— Collecting reliable data
— Manipulating the data to identify any patterns
— Interpreting data, making inferences leading to hypotheses, and predicting future behavior.

8.3 Participate in a study of some local phenomenon such as the weather patterns over a period of time, collect the data and relate these to the regional patterns and the long-term climatic conditions.

8.4 Recognize and be able to cite the contributions to modern theories of such scientists as Galileo, Kepler, Hutton and Wegener.

8.5 Examine topics of current scientific interest in an objective and open-minded manner.

cepts To Be Developed

	Subconcepts
A perspective of the position and motion of the Earth in space is gained by celestial observation and measurements.	1. Through history man has searched for a systematic way of orienting himself and explaining his observations. 2. The motions of the Earth with respect to its neighbors have a profound effect on man. 3. The tools and technology used by Earth-Space scientists vary tremendously. — Earth-Space scientists use information from their observations to develop explanations of the universe.
Various theories attempt to explain the origin of the solar system and the universe.	1. Man's religions offer an explanation of the Earth's origin. 2. Science views the origins in terms of observable processes. a. Big Bang Theory is widely held as a possible explanation. b. Many others hold that the Steady-State Theory is more acceptable. c. Solar system origins can be explained in other ways.
Matter everywhere in the universe seems to be composed of the same elements that are found in the Earth.	1. Our knowledge of the universe comes from an analysis of its radiation. a. Spectroscopic studies of the radiation aid in giving knowledge about stars and planets. b. Radiation is studied with optical and radio telescopes. 2. Matter is clustered more densely in some parts of the universe. a. The largest local clusters of matter are galaxies. — galaxies are accumulations of many stellar bodies. b. Stars and other celestial bodies can be classified and grouped. 3. Matter in the universe appears to be moving at tremendous velocities. a. Interstellar distances are measured in light years, and astronomical units. b. Observations of celestial positions are made over a period of many years to determine motions in the universe.
The Sun is a typical star.	1. Much of what we surmise about the stars comes from our observations of the Sun. a. Radiation from the Sun can be used to investigate its structure, motions, history and processes.

b. Solar radiation is both beneficial and ha
ful to life on its planets.
c. Solar gravity and planetary inertia m
tain a system of planets in orbit.
— Planetary motion is predictable.
— The members of this solar system d
in their physical characteristics
dynamic properties:
— several planets have satellites of t
own,
— the moon provides an opportunit
study an extra-terrestrial body;
— Exploration of space has generated
knowledge, new technologies, and
problems.
2. Most of the Earth's energy comes from the S
— The radiation affects the atmosphere,
oceans and the land masses.

8.5 The surface of the Earth and its inhabitants are surrounded by an atmosphere of air.

1. Air is matter.
a. Air is a mixture of gases.
b. Air has weight and exerts pressure w
can be measured.
2. The atmosphere is heated by the Sun's en
which is absorbed by the Earth.
a. Radiant energy from the Sun is transfor
into sensible and latent heat. Much o
incoming heat is absorbed by the Earth
its oceans.
b. Heat absorption by the Earth varies.
— Light colored areas reflect more
than dark areas
— Oceanic areas reflect more heat
continental areas
— The altitude of the Sun above the hor
affects the heat absorbed.
c. Absorbed heat is distributed by a numb
mechanisms.
— Radiation is a means by which a w
body loses heat
— Convection currents distribute
quickly and efficiently
— The distribution of heat is also achi
by conduction.
3. The air of the atmosphere is in constant m
due to unequal heating and the rotation o
Earth.
a. There is a pattern to the planetary w
with several clearly definable zones.
b. Local winds are affected by land form
bodies of water.

4. Water vapor is an important constituent of air.
   a. Water vapor enters the atmosphere by evaporation.
   b. Water vapor eventually condenses as the air is cooled and becomes saturated.
      — Clouds and fog are condensed moisture suspended in the air.
      — Precipitation is the result of moisture droplets becoming too large to remain in suspension.

Local conditions in the atmosphere are referred to as weather.

1. Weather reports give information about local and global atmospheric conditions.
   a. The information is gathered by instruments at weather stations and by weather satellites.
   b. The information given includes reports of air pressure, air temperature, relative humidity, wind direction and speed, cloud cover and precipitation.
   c. The weather map is a record of the information gathered and is used to predict future weather.
2. An air mass is a large body of air with similar temperature and humidity at all levels.
   a. Fronts form at the boundary between different air masses.
      — Fronts can be classified
      — Changes in weather are often associated with fronts.
      — Violent storms are often associated with fronts.
   b. High pressure areas often serve to define the extent of air masses.
   c. Low pressure areas usually form in association with fronts.

Weather conditions as recorded over a long period of time define the climate of a region.

1. Weather statistics over a period of time can be used to compare one region with another.
   — Latitude, altitude, and position with respect to certain land forms and bodies of water determine the climate in a region.
2. Climate determines much of man's activities, housing, dress and diet.

Weather modification has occurred through man's activities.

1. Atmospheric pollution has become a major issue.
2. Rain-making and hail suppression are active research topics.
3. Fog and frost control has economic value.

8.9 Water is an important part of the Earth's surface.

1. The water cycle is the continuous movemen moisture from ocean to land and return.
2. The oceans form a large portion of the Eart surface.
   a. Sea water contains many minerals in s tion.
   b. There is a wide diversity of living organis in the oceans.
      — The ocean's food supply may be very portant to man's survival.
   c. The ocean floor has topography simila that on the continents, with several im tant differences.
      — The continental margins are very im tant features both politically economically.
   d. The circulation patterns of the oce water are the result of forces simila those affecting the atmosphere.
      — Currents in ocean water are initiate differences in density, salinity, and the prevailing winds.
      — Movement of sea water tends to dist ute heat.
   e. Wave action within bodies of water is important force in the modification of shore line.
   f. Tides are caused by the gravitational traction between the Earth, Moon and S

8.10 The crust of the Earth is constantly being changed.

1. Erosion is the process of wearing down of land forms.
   a. Precipitation falls on the land areas runs off to the sea.
      — Running water on the land surface t to reduce the relief;
      — The rate of erosion depends upon amount of run off, the gradient of slope, the type of rock, and the gro cover;
      — Water run-off forms brooks, which streams, which form river systems;
      — Sediments may be redeposited m times on their journey to the sea;
      — Soil is formed from the breakdown o rock material;
      — Water that does not run off is hel ground water near the surface. In regions the ground water is hel perma-frost;

— In cold climates precipitation builds up into glaciers; glaciers move under the influence of gravity and in doing so change the land surface. Surface features serve as evidence of past glaciation.

b. Air movements carry materials from one place to another.
— Windblown material is deposited in characteristic surface features.
— Soil removal by winds may have serious economic effects.

2. Landforms are being built up by movements within the crust.
a. Forces within the Earth cause deformation of surface features.
— Earthquakes are the result of movements of masses of rock.
— Volcanism is associated with faulting in the crust.
— Faulting and folding are the result of large forces in the crust.
b. Forces acting on the crust result from the nature of the structure of the Earth.
c. Theories have been advanced to explain how forces have acted on the crust to produce the present landforms.
— Continental drift, plate tectonics and sea floor spreading are theories advanced to explain crustal deformation.

The crust of the Earth is formed of rocks.

1. Rocks can be categorized into three main groups.
a. Initially all rocks were formed by the cooling magma of the Earth.
— Texture and mineral content of igneous rocks can be used for identification.
b. Erosion and/or deposition form sedimentary rocks.
— Grain size and/or mineral content of sedimentary rocks can be used for identification.
c. Metamorphic rocks are reconstituted sedimentary and igneous rocks.
— Metamorphic rocks are classified on the basis of their mineral content and structure.

2. Materials from the crust have had an important influence on the history of man.
a. Man has mined the Earth for materials since prehistoric times. The mining of certain minerals is economically very important in Canada.

b. Fossil fuels and their products are im
tant in the economy of Alberta.
c. Other rocks and minerals are of econ
importance to Albertans.
d. Crustal materials are limited and expl
tion must be managed for maximum
efit.

8.12 Evidence for determining the past history of the Earth comes from a study of the crust.

1. Age determinations can be estimated on
basis of rates of changes of crustal materi
a. Sediments have been laid down throug
the life of the Earth.
b. Radioactive elements decay at a meas
ble rate.
2. Fossil evidence can be used to relate
events in the history of the Earth from
place to another.
a. There are different kinds of fossil evide
remains, casts, molds, and replacement
sils.
b. Fossil evidence is used in oil and ga
ploration.
3. Earth history can be divided into perio
time on the basis of the type of fossil evide
— Through geologic time life has become
complex and diversified.

GRADE NINE

Prescribed References:

Bickel, C. L., et al, *Physical Science Investigations.* Markham: Hou
Mifflin, 1976

Carter, J. L., et al, *Physical Science: A Problem Solving Approach.*
borough: Ginn and Co., 1977

Heath, R. W. and R. R. McNaughton, *Physical Science: Interacti*
Matter and Energy. Toronto: D. C. Heath, 1976

Townsend, R. D. and P. DeH. Hurd, *Energy, Matter and Change.*
court: Gage and Co. 1973

Objectives: After participating in the activities and completing the as
ments associated with this course, the student should be abl

9.1 Demonstrate a knowledge of and be able to discuss the ident
major concepts and their associated subconcepts within the cont
a study of physical science. These major concepts are:

9.1.1 Matter occupies space and has mass.

9.1.2 The forms and behavior of matter can be explained by
Kinetic Molecular Theory.

9.1.3 The many forms of energy can be transferred from pla
place or converted from one form to another, but in each
the total amount of energy remains constant.

9.1.4 Matter and Energy are related and interchangeable.
9.1.5 Energy is responsible for bringing about physical and/or chemical changes in the forms and behavior of matter.

9.2 Demonstrate proficiency in the scientific investigative skills of:
— Problem identification
— Outlining procedures and safe work habits
— Organizing observations and data
— Recording results
— Making inferences which relate to hypotheses
— Predicting future behaviors

9.3 Identify and discuss the development of a major scientific concept such as the Kinetic Molecular Theory as it was explained by Galileo, Bacon, Thompson, Davy and Maxwell.

9.4 Participate in the routine management of the laboratory program by being responsible for the preparation of materials and equipment prior to and following laboratory periods.

9.5 Investigate scientific factors involved with a technological topic such as the development of alternative sources of energy.

ncepts To Be Developed

Matter occupies space and has mass.

Subconcepts

1. Fundamental to the process of science is the establishment of standards for making measurements.
   a. The development of standard units and systems of measurement has taken place slowly.
   b. Good measurement techniques are necessary in order to obtain meaningful data.
   c. All measurements are approximate.
   d. Relationships between data are more clearly demonstrated and more easily understood by using graphs.

2. Matter can be measured by determining its linear dimensions, its surface area and its volume.
   a. Area is the number of square units of surface.
   b. Volume is the space occupied by matter.
   c. Volume of irregularly shaped solids may be found indirectly by liquid displacement.

3. Matter can be measured in terms of its mass and weight.
   a. Mass is a measure of the quantity of matter in an object.
   b. Weight of an object is a measure of the force of gravity acting on the object.

4. Density (average density) is a measure of t mass per unit volume of matter.
   a. Density is a characteristic property of a given sample of matter and is, therefo useful for identification purposes.
   b. Molecular arrangement influences densit
   c. As the volume of a substance changes response to temperature variation, t density changes.
   d. The influence of temperature change density is generally less for a solid than fo liquid, and less for a liquid than for a g
5. Pressure is a measure of force acting on a u area.
   a. Solids exert pressure on a surface.
   b. Fluid pressure varies directly with dept
   c. At any point within a fluid, force and pr sure are equal in all directions.
   d. Objects placed in fluids are subject to upward buoyant force.
   e. In moving fluids, pressure decreases as locity increases.
6. Inertia is a fundamental property of matte — Matter has a natural tendency to continue whatever state of motion or rest it is in, any given instant.

9.2 The forms and behavior of matter can be explained by the Kinetic Molecular Theory.

1. Matter is composed of tiny particles.
   a. A molecule is the smallest particle of mat that has the properties of a larger amount that substance.
   b. Molecules vary in size.
   c. Spaces exist between the molecules of m ter.
   d. Molecular composition determines t chemical properties of matter.
   e. Physical properties of matter are det mined by inter-molecular distances a forces.
2. Molecules are in a state of constant motion
   a. Brownian movement provides indirect e dence of molecular motion.
   b. Motion may be vibrational about a fix position (solids).
   c. Molecules may be able to slide or move o one another in random directions (liquid
   d. Molecules may have considerable freed of movement in random directions (gase
   e. The greater the freedom and rate of mo ment of molecules of the same kind, t higher their energy content.

3. Heat and temperature are related.
   a. Heat refers to the total energy content of a substance due to molecular motion.
   b. Temperature is a measure of the average kinetic energy content of the molecules of a substance.
   c. Temperature may be measured indirectly by utilizing the response of matter to changes in temperature.
      — An arbitrarily chosen standard is necessary in the construction of most temperature scales.
      — Several temperature scales have been devised: Celsius, Fahrenheit, Kelvin.
   d. Heat is measured indirectly by the effects it produces.
      — Heat is measured by observing temperature changes of a known mass of water at a known initial temperature.
      — Heat is measured in joules.
   e. Different substances absorb or release different amounts of heat, even though they have similar masses and undergo similar temperature changes.
      — The heat capacity of water is greater than that of most other substances.
      — Substances having high heat capacities are good coolants.
   f. When a body at higher temperature is in contact with a body at a lower temperature, heat flows from the first to the second body.
      — Heat is conserved in that the amount of heat lost by one substance is equal to the amount of heat gained by the other.
4. Matter exists in different states.
   a. Matter can exist in solid, liquid or gas form.
      — Each state is characterized by definite general properties.
   b. The addition or removal of heat causes matter to change state.
   c. As any given pure substance changes state, its properties change, its composition does not.
   d. Temperature remains constant during a change of state.
   e. The amount of heat required to change a given quantity of matter from solid to liquid, or from liquid to gas, is called latent heat of fusion and latent heat of vaporization, respectively.

5. A relationship exists between molecular
tion and the volume occupied by matter.
   a. With few exceptions, the volume of a s
   increases as molecular vibrational mo
   increases.
   b. With the exception of water at temp
   tures below 4°C, liquids increase in vol
   as molecular motion increases.
   c. All gases, at constant pressure, expand
   formly as molecular motion increases.
6. Molecular movement is the basis for diffusi
   a. Diffusion is the penetration of one typ
   molecule into matter consisting of a sec
   type of molecule.
   b. Diffusion is slow in solids due to lim
   molecular motion and their closely pac
   orderly arrangement.
   c. Diffusion takes place more readily
   liquids and gases.
   d. Rate of diffusion depends on the temp
   ture of the substances.
   e. Rate of diffusion depends on the size of
   molecules involved.
   f. Dissolving is a form of diffusion.
   g. Solutions are formed when molecules of
   substance spread out evenly through
   another substance.
      — No boundaries between components
      solution can be observed.
7. Pressure in gases results from molecular
tion.
   a. Gas pressure is due to molecular bomb
   ment of a surface.
   b. Pressure depends upon the numbe
   molecules present and their average sp
   c. Compression of gases results in incre
   molecular motion and thus increased t
   perature.
   d. Expansion of gases results in redu
   molecular motion and thus reductio
   temperature.
8. Molecular motion results in evaporation.
   a. Evaporation involves a change in state
   a liquid to a gas.
   b. Evaporation occurs as faster moving
   ecules near the surface escape.
   c. Evaporation produces a cooling effect.
   d. Different liquids evaporate at diffe
   rates.

e. Rate of evaporation of a given liquid depends on:
— Temperature of the liquid
— Vapor content of the air above
— Movement of air across the liquid surface
— Surface area of the liquid that is in contact with the air.

9. Forces of attraction between molecules and characteristics of the molecules of a substance account for many properties of matter.
   a. Cohesion results from the forces of attraction existing between molecules of the same kind.
      — Cohesive forces are greatest in solids, weaker in liquids, and negligible in gases.
      — Tensile strength is a measure of cohesion between adjacent molecules.
      — Ductility, malleability and elasticity depend on cohesive forces.
      — Surface tension of liquids depends on cohesive forces.
   b. Adhesion is the force with which unlike molecules attract each other.
   c. Shape of liquid surfaces depends on cohesion and adhesion.
   d. Capillarity depends on both adhesion and surface tension.

The many forms of energy can be transferred from place to place or converted from one form to another, but in each case, the total amount of energy remains constant.

1. Energy is the ability or capacity to do work or cause motion.
   — Work encompasses factors of force, distance, movement and direction.
   — Work is accomplished only when the applied force causes an object to move in the same direction as the force.
   — Units of measurement have been devised which quantitatively express force, distance and work.
   — The rate at which work is done is defined as power.
2. Energy can be transferred from one place to another.
   a. Work represents a transfer of energy and/or heat.
   b. Machines transfer energy from place to place in order to do work advantageous to man.
      — Considering inclined planes, simple pulleys and pulley systems, and simple levers, machines are devices man uses to

multiply force, to change the directi
a force, to gain speed, or to gain distar

c. The transfer and conversion of energy
derlies conduction, convection, radiati
d. The transfer and conversion of energy
derlies light, sound and electricity.

3. Energy may be described as either kinet
potential energy.
a. Energy is present in the universe in sev
forms:
— electrical energy
— chemical energy
— mechanical energy
— heat energy
— light energy
— nuclear energy
— gravitational energy
— magnetic energy
b. One form of energy may be changed
another.

4. In all energy changes or transfers, the
amount of energy remains constant (La
Conservation of Energy).

9.4 Matter and energy are related and interchangeable.

1. Theories and/or models have been develop
assist in understanding atoms.
a. All matter is made up of atoms.
b. The atomic model has an internal stru
consisting of protons and neutrons for
a central core or nucleus, and an
structure of electrons.
c. The various kinds of atoms are calle
ments.

2. A relationship exists between atoms and
ecules.
— Atoms can exist individually or in com
tion with other atoms of the same or d
ent elements, and therefore, are the bui
blocks of molecules.

3. A relationship exists among elements,
pounds and mixtures.

4. Matter and energy are interrelated. The
amount of energy and matter in the uni
remains constant.
a. Matter is split apart to release ener
fission reactions.
b. Matter is combined to release energy
sion reactions.

Energy is responsible for bringing about physical and/or chemical changes in the forms and behavior of matter.

1. There is a difference between physical and chemical changes.
   a. In a physical change, one or more of the properties of a substance are altered but not its composition or identity.
      — A change of state represents one of the most common physical changes.
      — Changes in molecular motion and inter-molecular distances and forces of attraction account for physical changes.
   b. In a chemical change, atoms are rearranged resulting in new substances with new properties.
      — Most chemical changes require a great deal more energy than do physical changes.
   c. Some changes are reversible, some occur in cycles, some are irreversible.
2. There are several kinds of chemical changes or reactions.
3. Chemical reactions are usually accompanied by energy changes.
4. Rate of chemical reaction may be affected by temperature, concentration, surface area and catalysts.

MATHEMATICS

Objectives

The objectives for junior high school mathematics courses are:

1. To develop an understanding of mathematical concepts and an appreciation of mathematical structure.
2. To develop skill in the use of the fundamental processes.
3. To develop systematic methods of analyzing problems and of presenting their solutions.
4. To develop habits of precise thought and expression.
5. To develop an understanding of the significance and application of mathematics in the modern world.

Junior High School Mathematics Course Outlines

The list of topics indicates the program of studies in junior high school mathematics. While the list has been distributed through three years of study, it is not necessary to follow the yearly sequence of topics indicated. If departures from the sequence are made, coordination in the school should ensure that the complete program has been offered by the end of the junior high school period.

GRADE VII MATHEMATICS

Recommended Texts

Hanwell et al. *Contemporary Mathematics 1.* Holt, Rinehart and Winston, 1964.

Keedy et al. *Exploring Modern Mathematics.* Book I. Holt, Rinehart and Winston, 1965.

Van Engen et al. *Mathematics: Concepts and Applications.* First Course. Scott, Foresman & Co. (Gage), 1969.

Topics

A. *Sets*
1. An understanding of the concepts of set and subset
2. The ability to make appropriate use of set notation
3. Knowledge of and ability to perform the operations of union and intersection.

B. *The Whole Number System*
1. The position of whole numbers on the number line
2. Ability to perform operations on the whole numbers
3. Recognition and identification of the following properties of operations on the whole number system
   a) closure
   b) commutative
   c) associative
   d) distributive
4. The properties of the identity elements
5. Conventions for the order of operations in simplification of expressions

INDUSTRIAL EDUCATION

INTRODUCTION

Industrial Education has a unique place to fill in an education program that has as its objective the development of an informed citizenry in a highly industrialized society — a society that must learn to manage an industrial complex unknown before and to work in vocations not yet described. Industrial Education is a subject area the scope of which introduces students, both boys and girls, to all aspects of productive society.

OBJECTIVES

The following are the objectives of the Junior High School Industrial Education courses:

A. Personal Growth

1. To provide opportunities for the individual growth of the student through the development of acceptable personal and social values necessary in a productive society.
2. To provide a technical environment which motivates and stimulates individuals to discover their interests and develop personal and social responsibilities.
3. To assist in the development of positive attitudes towards safety.
4. To assist in the development of positive attitudes towards conservation and ecology.
5. To assist in the development of consumer values.
6. To assist in the development of positive attitudes towards the dignity of work.
7. To assist in the development of good work habits.
8. To foster the development of vocational interests and skills.

B. Career Exploration

To provide students with experiences which will assist them in making realistic career choices.

1. To provide students an opportunity, within a technical environment, to become acquainted with the general occupational characteristics of a variety of career fields.
2. To relate their own interests, abilities, likes, dislikes, and values to several career fields.

C. Occupational Skills

To develop basic competencies, integrating cognitive and psychomotor skills related to families of occupations.

1. To provide safe exploratory experiences in the use of tools, energy, equipment and materials appropriate to various technologies prevalent in a productive society.
2. To develop an understanding of the interrelationships of various technologies.

3. To provide a technical environment which permits students to synthesize their accumulated knowledge in the solution of practical problems, and to assist students to develop habits that will be conducive to the establishment of a safe environment.

The guide will provide specific objectives for each of the fields of study. The use of behavioral objectives is recommended but such objectives have not been included. Each teacher should prepare a set of behavioral objectives in accordance with their interests and methods of approach to the work.

PROGRAM DESCRIPTION

A. Organization

The multiple activity program is an organizational device by means of which a variety of exploratory experiences can be presented with a minimum of room and equipment. The laboratory is organized into a number of different sections representing the fields of study. Each section or bay is large enough to accommodate 4 to 6 students. These bays are as self-contained as possible with provisions made for the storage of tools, products and stock within them. The class is divided into three or more groups with each group working through the course unit in the assigned bay. After the completion of the unit in from nine to twelve weeks the groups rotate, each proceeding to another bay and to new experiences.

As the units consist of from nine to twelve weeks of work, depending on the number of areas in operation, there will be several weeks unaccounted for. This time, two to four weeks, could be used at the beginning of the year to organize the activities of the groups, plan the first product for an area, teach the beginning lessons of each unit, give demonstrations, and provide the information required to get each group started efficiently in their assigned unit.

Poor management and lack of planning are bound to result in confusion. Therefore, the teacher must have a well devised plan before attempting to operate a multiple activity laboratory.

B. Fields of Study

To provide for a breadth of exploratory experiences, the junior high school industrial education program is divided into four fields of study which are further sub-divided into sixteen modules. Each module represents fifteen to twenty-five hours of study. The minimum number of modules studied in one year is three. During the junior high school years it is recommended that a student study a minimum of three *different* modules each year. In junior high schools where Industrial Education is taught for two years, it is recommended that four *different* modules per year should be studied.

Fields of Study	Modules
Power Technology	Power Mechanics Electricity Electronics-Computer
Materials Technology	Earths Lapidary-Art Metals Leather-Textiles Metals Plastics Woods
Visual Communication	Graphics Photography-Drafting
Synthesizing	Consumerism Construction Manufacturing Student Contracting Developmental Research

In addition to the four fields outlined, the junior high school industrial education program includes a testing area and an instructional materials center. The testing area utilizes the materials and some of the products made in the other areas. The instructional materials center is used as a students' resource room, conference room and research area. *The Developmental Research Unit* is to be used for teacher research into *new* content only. The teacher must define the content of this unit and obtain the approval of the Provincial Consultant of Industrial Education and his principal before introducing it to the students.

C. Length of Program

The recommended time is from 4800 - 7000 minutes per year or 120-175 minutes per week in two blocks of time.

D. Scope of Program

The scope of the industrial education program includes the major technologies and all students, both boys and girls, should have the opportunity to explore the fields.

E. Safety

Each industrial education laboratory must have an effective safety program. This does not mean that the promulgation of a set of rules and regulations will satisfy this end. Students must be taught in each and every subject studied within the industrial education framework, the "hows and whys" inherent in the safety program. It is the responsibility of the teacher to supply continuous and vigilant supervision and to ensure that all students engage in only safe laboratory practices.

REFERENCES

No single textbook is prescribed. References for each module are listed in the course Guide.

CONTENT

Power Technology

Module 1. Electricity
— sources, circuitry, control, magnetism, utilization, appliance maintenance, guidance.

Module 2. Electronics Computer
— component functions, electronic sound generation, wireless transmission, computer, radio, phonograph/public address system, guidance.

Module 3. Power Mechanics
— small gas engines, small gas engine tune-up, CO_2 powered car, model rocketry, fluid power, mechanical power, guidance.

Materials Technology

Module 1. Earths Technology
— sources of ceramic and concrete materials, processes, societal implications, guidance.

Module 2. Lapidary and Art Metals Technology
— sources of material, processes, societal implications, guidance.

Module 3. Leather and Textiles Technology
— sources of materials, processes, societal implications, product planning, guidance.

Module 4. Metals Technology
— sources of materials, processes, societal implications, properties, product planning, guidance.

Module 5. Plastics Technology
— sources of materials, processes, societal implications, properties, product planning, guidance.

Module 6. Woods Technology
— sources of materials, processes, properties, societal implications, product planning, guidance.

Visual Communications

Module 1. Graphics
— offset, photo-offset, platen press, rubber stamp (optional), sign press, silk screen, photo silk screen.

Module 2. Photography/Drafting
— audio-visual production, camera, darkroom, advanced darkroom, freehand sketchings, instrument drawing.

Synthesizing Modules

Module 1. Construction
— pre-construction planning, preparation for construction, framing, utilities installation, finishing, transferring ownership, occupational information.

Module 2. Industrial Simulation
— history, production systems, systems of ownership, department organization, occupational information.

Module 3. Consumerism Module
— packaging, advertising, marketing, accounting, personnel training, occupational information.

Module 4. Student Contracting

Module 5. Developmental Research

INTRODUCTION

This Program of Studies contains an outline content of each course in the Junior High School together with a list of the recommended texts and approved secondary references. Regulations with respect to the credit value of courses, examinations and other matters relating to the operation of the high school appear in the current issue of the *Junior-Senior High School Handbook*.

Teachers who want suggestions concerning methods of handling a given course will find them in the related curriculum guide which may be obtained through the office of their superintendent, or purchased from the Printing and Stationery Branch, Department of Education.

The assistance of committees in preparing the outlines in the various subjects is gratefully acknowledged.

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SCIENCE

OBJECTIVES OF SECONDARY SCHOOL SCIENCE FOR ALBERTA

The learning of science as an area of human endeavour, should provide the student with a scientific literacy which enables him to assume an active and useful role as a citizen in a democractic society. It may be assumed that this literacy is best achieved by considering the individual needs of students and through independent study and learning.

The objectives of Secondary School Science are:

1. To promote an understanding of the role that science has had in the development of societies:
   a. history and philosophy of science as part of human history and philosophy
   b. interaction of science and technology
   c. effect of science on health, population growth and distribution, development of resources, communication and transportation, etc.
2. To promote an awareness of the humanistic implications of science:
   a. moral and ethical problems in the use and misuse of science
   b. science for leisure-time activities
3. To develop a critical understanding of those current social problems which have a significant scientific component in terms of their cause and/or their solution:
   a. depletion of natural resources
   b. pollution of water and air
   c. overpopulation
   d. improper use of chemicals
   e. science for the consumer
4. To promote understanding of and development of skill in the methods used by scientists:
   a. processes in scientific inquiry such as observing, hypothesizing, classifying, experimenting and interpreting data
   b. intellectual abilities such as intuition, rational thinking, creativity, and critical thinking
   c. skills such as manipulation of materials, communication, solving problems in groups, and leadership
5. To promote assimilation of scientific knowledge:
   a. emphasis on fundamental ideas
   b. relevance of scientific knowledge through inclusion of practical applications
   c. application of mathematics in science
   d. inter-relationships between the sciences
   e. open-endedness of science and the tentativeness of scientific knowledge.
6. To develop attitudes, interests, values, appreciations, and adjustments similar to those exhibited by scientists at work.
7. To contribute to the development of vocational knowledge and skill:
   a. science as a vocation
   b. science as background to technical, professional and other vocations.

GRADE SEVEN

Prescribed References:

Carter, J. L. et al, *Life Science: A Problem Solving Approach*. Scarborough: Ginn & Co., 1977

Smallwood, W. L., *Challenges to Science: Life Science*. Scarborough: McGraw-Hill, 1976

Objectives: After participating in the activities and completing the assignments associated with this course, the student should be able to:

7.1 Demonstrate a knowledge of and be able to discuss the identified major concepts and their subconcepts within the context of a study of life science. These major concepts are:

7.1.1 All sets of objects including living things may be classified into groups having common characteristics.

7.1.2 Cells are the unit of structure and function of most living things.

7.1.3 Living things carry on certain fundamental processes to sustain and perpetuate life.

7.1.4 All living things interact with and are interdependent upon each other and their environment.

7.2 Acquire such investigative skills associated with science as:
— Observing with all the senses
— Classifying related objects or ideas
— Quantifying measured data
— Manipulating data to identify the patterns
— Identifying problems clearly so that the variables may be controlled or manipulated
— Interpreting data, making inferences leading to hypotheses and predicting future behavior.

7.3 Identify and discuss the limitations of experimental data in terms of the underlying assumptions and the identified problem.

7.4 Assume a responsibility for keeping the workspace neat and tidy by practicing safe, and careful, work habits.

7.5 Recognize and be able to cite examples of the contributions made by such historical figures as Robert Hooke, Louis Pasteur.

7.6 Investigate factors related to the wise use of renewable resources and man's impact upon the environment.

Concepts To Be Developed

7.1 All sets of objects including living things may be classified into groups having common characteristics.

Subconcepts

1. Classification makes thinking about a large number of things simpler and easier.
   — Within large groups, members share some common characteristics; within smaller subgroups, members share a greater number of common characteristics.

2. An international system of classifying living things has been developed to facilitate the organization and exchange of knowledge of living things.
   — Living things may be classified as protist, plant or animal.
3. A simple key may be used to facilitate identification of organisms.

7.2 Cells are the unit of structure and function of most living things.

1. The techniques and tools of scientists aid in observing things (e.g. microscopes, balances, etc.)
2. Plant and animal cells share many common characteristics.
3. Cells live independently or in groups.
   a. Single celled organisms perform all the functions necessary for life.
   b. Some cells in multi-cellular organisms are specialized to carry out specific functions.

7.3 Living things carry on certain fundamental processes in order to sustain and perpetuate life.

1. Organisms require nutrients for energy.
   a. Green plants are the primary producers of food (photosynthesis).
   b. Digestion is the process of breaking down food.
   c. There is a chain of food and energy from primary producers to consumers to decomposers.
2. All living things obtain their energy from *respiration*.
   a. Respiration is the oxidation of sugar in controlled conditions.
   b. Organisms obtain oxygen from their environment in a variety of ways.
3. Food products and gases must be circulated to all cells throughout an organism (circulation).
   a. Cells receive nourishment and eliminate waste through the process of diffusion.
   b. More complex organisms show need for a more specialized circulatory system.
4. Organisms eliminate wastes to their environment (egestion and excretion).
5. *Growth* of an organism may result in change in structure or proportion, or an increase in size.
6. Living things react to their internal and external environment (sensitivity).
   a. Different species may have different ways of receiving and responding to stimuli.
   b. Living things differ in their response to the environment (adaptation).

7. To ensure survival of the species, living organisms must *reproduce.*
   a. Some organisms reproduce sexually, some asexually, and some by both means.
   b. An offspring inherits certain characteristics from its parents.
   c. There are many variations within a population.
   d. Living things have developed a variety of structural and behavioral adaptations to ensure reproduction.

7.4 All living things interact with and are interdependent upon each other and their environment.

1. The biosphere is the region in which life on our planet is possible.
2. Eco-systems are units in the biosphere in which living and non-living things interact.
3. Plants and animals living and interacting in any eco-system are known as a community.
4. The members of each community show adaptations which are necessary for survival in the community.
   a. Some organisms are specific to certain communities (distribution).
   b. Some organisms may exist in more than one community (tolerance).
5. An organism is the product of both heredity and environment.
6. The environment and the distribution of organisms are in a state of continual change.
   a. Nature constantly re-cycles materials.
   b. Changes may take place over an extended period of time.
7. Man's influence on the environment can be directed constructively.
   a. Man's influence may increase the rate of change with beneficial or harmful results to the environment.
   b. Man commands the use of a great supply of energy to change the environment to his liking.
   c. Man's production and use of energy causes pollution.
   d. The preservation of man's biological resources depends on an awareness and the positive action of each individual.

GRADE EIGHT

Prescribed References:

Heller, R. L. et al, *Challenges to Science: Earth Science.* Scarborough: McGraw-Hill, 1976

Jackson, J. H. and E. D. Evans, *Spaceship Earth: Earth Science.* Markham: Houghton-Mifflin, 1976

Objectives: After participating in the activities and completing the assignments associated with this course, the student should be able to:

8.1 Demonstrate a knowledge of and be able to discuss the identified major concepts and their associated subconcepts within the context of a study of the earth. These major concepts are:

- 8.1.1 A perspective of the position and motion of the Earth in space is gained by celestial observations and measurements.
- 8.1.2 Various theories attempt to explain the origin of the solar system and the universe.
- 8.1.3 Matter everywhere in the universe seems to be composed of the same elements that are found in the Earth.
- 8.1.4 The Sun is a typical star.
- 8.1.5 The surface of the Earth and its inhabitants are surrounded by an atmosphere of air.
- 8.1.6 Local conditions in the atmosphere are referred to as weather.
- 8.1.7 Weather conditions as recorded over a long period of time define the climate of a region.
- 8.1.8 Weather modification has occurred through man's activities.
- 8.1.9 Water is an important part of the Earth's surface.
- 8.1.10 The crust of the Earth is constantly being changed.
- 8.1.11 The crust of the Earth is formed of rocks.
- 8.1.12 Evidence for determining the past history of the Earth comes from a study of the crust.

8.2 Demonstrate increasing competence in the investigative skills associated with science:
— Observing with all of the senses
— Manipulating technical instruments
— Collecting reliable data
— Manipulating the data to identify any patterns
— Interpreting data, making inferences leading to hypotheses, and predicting future behavior.

8.3 Participate in a study of some local phenomenon such as the weather patterns over a period of time, collect the data and relate these to the regional patterns and the long-term climatic conditions.

8.4 Recognize and be able to cite the contributions to modern theories of such scientists as Galileo, Kepler, Hutton and Wegener.

8.5 Examine topics of current scientific interest in an objective and open-minded manner.

ncepts To Be Developed

A perspective of the position and motion of the Earth in space is gained by celestial observation and measurements.	**Subconcepts** 1. Through history man has searched for a systematic way of orienting himself and explaining his observations. 2. The motions of the Earth with respect to its neighbors have a profound effect on man. 3. The tools and technology used by Earth-Space scientists vary tremendously. — Earth-Space scientists use information from their observations to develop explanations of the universe.
2 Various theories attempt to explain the origin of the solar system and the universe.	1. Man's religions offer an explanation of the Earth's origin. 2. Science views the origins in terms of observable processes. a. Big Bang Theory is widely held as a possible explanation. b. Many others hold that the Steady-State Theory is more acceptable. c. Solar system origins can be explained in other ways.
3 Matter everywhere in the universe seems to be composed of the same elements that are found in the Earth.	1. Our knowledge of the universe comes from an analysis of its radiation. a. Spectroscopic studies of the radiation aid in giving knowledge about stars and planets. b. Radiation is studied with optical and radio telescopes. 2. Matter is clustered more densely in some parts of the universe. a. The largest local clusters of matter are galaxies. — galaxies are accumulations of many stellar bodies. b. Stars and other celestial bodies can be classified and grouped. 3. Matter in the universe appears to be moving at tremendous velocities. a. Interstellar distances are measured in light years, and astronomical units. b. Observations of celestial positions are made over a period of many years to determine motions in the universe.
4 The Sun is a typical star.	1. Much of what we surmise about the stars comes from our observations of the Sun. a. Radiation from the Sun can be used to investigate its structure, motions, history and processes.

b. Solar radiation is both beneficial and ha
ful to life on its planets.
c. Solar gravity and planetary inertia m
tain a system of planets in orbit.
— Planetary motion is predictable.
— The members of this solar system di
in their physical characteristics
dynamic properties:
— several planets have satellites of th
own,
— the moon provides an opportunity
study an extra-terrestrial body;
— Exploration of space has generated n
knowledge, new technologies, and n
problems.
2. Most of the Earth's energy comes from the S
— The radiation affects the atmosphere,
oceans and the land masses.

8.5 The surface of the Earth and its inhabitants are surrounded by an atmosphere of air.

1. Air is matter.
a. Air is a mixture of gases.
b. Air has weight and exerts pressure wh
can be measured.
2. The atmosphere is heated by the Sun's ene
which is absorbed by the Earth.
a. Radiant energy from the Sun is transfor
into sensible and latent heat. Much of
incoming heat is absorbed by the Earth
its oceans.
b. Heat absorption by the Earth varies.
— Light colored areas reflect more h
than dark areas
— Oceanic areas reflect more heat th
continental areas
— The altitude of the Sun above the hori
affects the heat absorbed.
c. Absorbed heat is distributed by a numbe
mechanisms.
— Radiation is a means by which a wa
body loses heat
— Convection currents distribute h
quickly and efficiently
— The distribution of heat is also achie
by conduction.
3. The air of the atmosphere is in constant mot
due to unequal heating and the rotation of
Earth.
a. There is a pattern to the planetary wi
with several clearly definable zones.
b. Local winds are affected by land forms a
bodies of water.

4. Water vapor is an important constituent of air.
   a. Water vapor enters the atmosphere by evaporation.
   b. Water vapor eventually condenses as the air is cooled and becomes saturated.
      — Clouds and fog are condensed moisture suspended in the air.
      — Precipitation is the result of moisture droplets becoming too large to remain in suspension.

6 Local conditions in the atmosphere are referred to as weather.

1. Weather reports give information about local and global atmospheric conditions.
   a. The information is gathered by instruments at weather stations and by weather satellites.
   b. The information given includes reports of air pressure, air temperature, relative humidity, wind direction and speed, cloud cover and precipitation.
   c. The weather map is a record of the information gathered and is used to predict future weather.
2. An air mass is a large body of air with similar temperature and humidity at all levels.
   a. Fronts form at the boundary between different air masses.
      — Fronts can be classified
      — Changes in weather are often associated with fronts.
      — Violent storms are often associated with fronts.
   b. High pressure areas often serve to define the extent of air masses.
   c. Low pressure areas usually form in association with fronts.

7 Weather conditions as recorded over a long period of time define the climate of a region.

1. Weather statistics over a period of time can be used to compare one region with another.
   — Latitude, altitude, and position with respect to certain land forms and bodies of water determine the climate in a region.
2. Climate determines much of man's activities, housing, dress and diet.

8 Weather modification has occurred through man's activities.

1. Atmospheric pollution has become a major issue.
2. Rain-making and hail suppression are active research topics.
3. Fog and frost control has economic value.

8.9 Water is an important part of the Earth's surface.

1. The water cycle is the continuous movement moisture from ocean to land and return.
2. The oceans form a large portion of the Earth surface.
   a. Sea water contains many minerals in so tion.
   b. There is a wide diversity of living organis in the oceans.
      — The ocean's food supply may be very i portant to man's survival.
   c. The ocean floor has topography similar that on the continents, with several imp tant differences.
      — The continental margins are very imp tant features both politically a economically.
   d. The circulation patterns of the ocea water are the result of forces similar those affecting the atmosphere.
      — Currents in ocean water are initiated differences in density, salinity, and the prevailing winds.
      — Movement of sea water tends to distr ute heat.
   e. Wave action within bodies of water is important force in the modification of t shore line.
   f. Tides are caused by the gravitational traction between the Earth, Moon and Su

8.10 The crust of the Earth is constantly being changed.

1. Erosion is the process of wearing down of t land forms.
   a. Precipitation falls on the land areas a runs off to the sea.
      — Running water on the land surface ten to reduce the relief;
      — The rate of erosion depends upon t amount of run off, the gradient of t slope, the type of rock, and the grou cover;
      — Water run-off forms brooks, which fo streams, which form river systems;
      — Sediments may be redeposited ma times on their journey to the sea;
      — Soil is formed from the breakdown of t rock material;
      — Water that does not run off is held ground water near the surface. In c regions the ground water is held perma-frost;

— In cold climates precipitation builds up into glaciers; glaciers move under the influence of gravity and in doing so change the land surface. Surface features serve as evidence of past glaciation.

b. Air movements carry materials from one place to another.
— Windblown material is deposited in characteristic surface features.
— Soil removal by winds may have serious economic effects.

2. Landforms are being built up by movements within the crust.
a. Forces within the Earth cause deformation of surface features.
— Earthquakes are the result of movements of masses of rock.
— Volcanism is associated with faulting in the crust.
— Faulting and folding are the result of large forces in the crust.
b. Forces acting on the crust result from the nature of the structure of the Earth.
c. Theories have been advanced to explain how forces have acted on the crust to produce the present landforms.
— Continental drift, plate tectonics and sea floor spreading are theories advanced to explain crustal deformation.

1 The crust of the Earth is formed of rocks.

1. Rocks can be categorized into three main groups.
a. Initially all rocks were formed by the cooling magma of the Earth.
— Texture and mineral content of igneous rocks can be used for identification.
b. Erosion and/or deposition form sedimentary rocks.
— Grain size and/or mineral content of sedimentary rocks can be used for identification.
c. Metamorphic rocks are reconstituted sedimentary and igneous rocks.
— Metamorphic rocks are classified on the basis of their mineral content and structure.

2. Materials from the crust have had an important influence on the history of man.
a. Man has mined the Earth for materials since prehistoric times. The mining of certain minerals is economically very important in Canada.

b. Fossil fuels and their products are im tant in the economy of Alberta.
c. Other rocks and minerals are of econo importance to Albertans.
d. Crustal materials are limited and explo tion must be managed for maximum b efit.

8.12 Evidence for determining the past history of the Earth comes from a study of the crust.

1. Age determinations can be estimated on basis of rates of changes of crustal materi
   a. Sediments have been laid down through the life of the Earth.
   b. Radioactive elements decay at a measu ble rate.
2. Fossil evidence can be used to relate p events in the history of the Earth from place to another.
   a. There are different kinds of fossil evide remains, casts, molds, and replacement sils.
   b. Fossil evidence is used in oil and gas ploration.
3. Earth history can be divided into period time on the basis of the type of fossil evide
   — Through geologic time life has become m complex and diversified.

GRADE NINE

Prescribed References:

Bickel, C. L., et al, *Physical Science Investigations*. Markham: Hough Mifflin, 1976

Carter, J. L., et al, *Physical Science: A Problem Solving Approach*. S borough: Ginn and Co., 1977

Heath, R. W. and R. R. McNaughton, *Physical Science: Interaction Matter and Energy*. Toronto: D. C. Heath, 1976

Townsend, R. D. and P. DeH. Hurd, *Energy, Matter and Change*. A court: Gage and Co. 1973

Objectives: After participating in the activities and completing the assi ments associated with this course, the student should be able

9.1 Demonstrate a knowledge of and be able to discuss the identif major concepts and their associated subconcepts within the contex a study of physical science. These major concepts are:

9.1.1 Matter occupies space and has mass.

9.1.2 The forms and behavior of matter can be explained by Kinetic Molecular Theory.

9.1.3 The many forms of energy can be transferred from place place or converted from one form to another, but in each ca the total amount of energy remains constant.

9.1.4 Matter and Energy are related and interchangeable.
9.1.5 Energy is responsible for bringing about physical and/or chemical changes in the forms and behavior of matter.

9.2 Demonstrate proficiency in the scientific investigative skills of:
— Problem identification
— Outlining procedures and safe work habits
— Organizing observations and data
— Recording results
— Making inferences which relate to hypotheses
— Predicting future behaviors

9.3 Identify and discuss the development of a major scientific concept such as the Kinetic Molecular Theory as it was explained by Galileo, Bacon, Thompson, Davy and Maxwell.

9.4 Participate in the routine management of the laboratory program by being responsible for the preparation of materials and equipment prior to and following laboratory periods.

9.5 Investigate scientific factors involved with a technological topic such as the development of alternative sources of energy.

oncepts To Be Developed

1 Matter occupies space and has mass.

Subconcepts

1. Fundamental to the process of science is the establishment of standards for making measurements.
   a. The development of standard units and systems of measurement has taken place slowly.
   b. Good measurement techniques are necessary in order to obtain meaningful data.
   c. All measurements are approximate.
   d. Relationships between data are more clearly demonstrated and more easily understood by using graphs.
2. Matter can be measured by determining its linear dimensions, its surface area and its volume.
   a. Area is the number of square units of surface.
   b. Volume is the space occupied by matter.
   c. Volume of irregularly shaped solids may be found indirectly by liquid displacement.
3. Matter can be measured in terms of its mass and weight.
   a. Mass is a measure of the quantity of matter in an object.
   b. Weight of an object is a measure of the force of gravity acting on the object.

4. Density (average density) is a measure of t mass per unit volume of matter.
   a. Density is a characteristic property of a given sample of matter and is, therefo useful for identification purposes.
   b. Molecular arrangement influences densit
   c. As the volume of a substance changes response to temperature variation, t density changes.
   d. The influence of temperature change density is generally less for a solid than fo liquid, and less for a liquid than for a g
5. Pressure is a measure of force acting on a u area.
   a. Solids exert pressure on a surface.
   b. Fluid pressure varies directly with depth
   c. At any point within a fluid, force and pre sure are equal in all directions.
   d. Objects placed in fluids are subject to upward buoyant force.
   e. In moving fluids, pressure decreases as v locity increases.
6. Inertia is a fundamental property of matter — Matter has a natural tendency to continue whatever state of motion or rest it is in, any given instant.

9.2 The forms and behavior of matter can be explained by the Kinetic Molecular Theory.

1. Matter is composed of tiny particles.
   a. A molecule is the smallest particle of matt that has the properties of a larger amount that substance.
   b. Molecules vary in size.
   c. Spaces exist between the molecules of ma ter.
   d. Molecular composition determines th chemical properties of matter.
   e. Physical properties of matter are dete mined by inter-molecular distances an forces.
2. Molecules are in a state of constant motion.
   a. Brownian movement provides indirect ev dence of molecular motion.
   b. Motion may be vibrational about a fixe position (solids).
   c. Molecules may be able to slide or move ove one another in random directions (liquids
   d. Molecules may have considerable freedo of movement in random directions (gases
   e. The greater the freedom and rate of move ment of molecules of the same kind, th higher their energy content.

3. Heat and temperature are related.
   a. Heat refers to the total energy content of a substance due to molecular motion.
   b. Temperature is a measure of the average kinetic energy content of the molecules of a substance.
   c. Temperature may be measured indirectly by utilizing the response of matter to changes in temperature.
      — An arbitrarily chosen standard is necessary in the construction of most temperature scales.
      — Several temperature scales have been devised: Celsius, Fahrenheit, Kelvin.
   d. Heat is measured indirectly by the effects it produces.
      — Heat is measured by observing temperature changes of a known mass of water at a known initial temperature.
      — Heat is measured in joules.
   e. Different substances absorb or release different amounts of heat, even though they have similar masses and undergo similar temperature changes.
      — The heat capacity of water is greater than that of most other substances.
      — Substances having high heat capacities are good coolants.
   f. When a body at higher temperature is in contact with a body at a lower temperature, heat flows from the first to the second body.
      — Heat is conserved in that the amount of heat lost by one substance is equal to the amount of heat gained by the other.
4. Matter exists in different states.
   a. Matter can exist in solid, liquid or gas form.
      — Each state is characterized by definite general properties.
   b. The addition or removal of heat causes matter to change state.
   c. As any given pure substance changes state, its properties change, its composition does not.
   d. Temperature remains constant during a change of state.
   e. The amount of heat required to change a given quantity of matter from solid to liquid, or from liquid to gas, is called latent heat of fusion and latent heat of vaporization, respectively.

5. A relationship exists between molecular m
tion and the volume occupied by matter.
   a. With few exceptions, the volume of a so
   increases as molecular vibrational moti
   increases.
   b. With the exception of water at tempe
   tures below 4°C, liquids increase in volu
   as molecular motion increases.
   c. All gases, at constant pressure, expand u
   formly as molecular motion increases.
6. Molecular movement is the basis for diffusio
   a. Diffusion is the penetration of one type
   molecule into matter consisting of a seco
   type of molecule.
   b. Diffusion is slow in solids due to limit
   molecular motion and their closely pack
   orderly arrangement.
   c. Diffusion takes place more readily
   liquids and gases.
   d. Rate of diffusion depends on the tempe
   ture of the substances.
   e. Rate of diffusion depends on the size of t
   molecules involved.
   f. Dissolving is a form of diffusion.
   g. Solutions are formed when molecules of o
   substance spread out evenly through
   another substance.
      — No boundaries between components o
      solution can be observed.
7. Pressure in gases results from molecular m
tion.
   a. Gas pressure is due to molecular bombar
   ment of a surface.
   b. Pressure depends upon the number
   molecules present and their average spee
   c. Compression of gases results in increas
   molecular motion and thus increased te
   perature.
   d. Expansion of gases results in reduc
   molecular motion and thus reduction
   temperature.
8. Molecular motion results in evaporation.
   a. Evaporation involves a change in state fr
   a liquid to a gas.
   b. Evaporation occurs as faster moving m
   ecules near the surface escape.
   c. Evaporation produces a cooling effect.
   d. Different liquids evaporate at differe
   rates.

e. Rate of evaporation of a given liquid depends on:
   — Temperature of the liquid
   — Vapor content of the air above
   — Movement of air across the liquid surface
   — Surface area of the liquid that is in contact with the air.

9. Forces of attraction between molecules and characteristics of the molecules of a substance account for many properties of matter.
   a. Cohesion results from the forces of attraction existing between molecules of the same kind.
      — Cohesive forces are greatest in solids, weaker in liquids, and negligible in gases.
      — Tensile strength is a measure of cohesion between adjacent molecules.
      — Ductility, malleability and elasticity depend on cohesive forces.
      — Surface tension of liquids depends on cohesive forces.
   b. Adhesion is the force with which unlike molecules attract each other.
   c. Shape of liquid surfaces depends on cohesion and adhesion.
   d. Capillarity depends on both adhesion and surface tension.

3 The many forms of energy can be transferred from place to place or converted from one form to another, but in each case, the total amount of energy remains constant.

1. Energy is the ability or capacity to do work or cause motion.
   — Work encompasses factors of force, distance, movement and direction.
   — Work is accomplished only when the applied force causes an object to move in the same direction as the force.
   — Units of measurement have been devised which quantitatively express force, distance and work.
   — The rate at which work is done is defined as power.
2. Energy can be transferred from one place to another.
   a. Work represents a transfer of energy and/or heat.
   b. Machines transfer energy from place to place in order to do work advantageous to man.
      — Considering inclined planes, simple pulleys and pulley systems, and simple levers, machines are devices man uses to

multiply force, to change the direction
a force, to gain speed, or to gain distanc
c. The transfer and conversion of energy u
derlies conduction, convection, radiation
d. The transfer and conversion of energy u
derlies light, sound and electricity.

3. Energy may be described as either kinetic
potential energy.
   a. Energy is present in the universe in seve
   forms:
      — electrical energy
      — chemical energy
      — mechanical energy
      — heat energy
      — light energy
      — nuclear energy
      — gravitational energy
      — magnetic energy
   b. One form of energy may be changed in
   another.
4. In all energy changes or transfers, the to
amount of energy remains constant (Law
Conservation of Energy).

9.4 Matter and energy are related and interchangeable.

1. Theories and/or models have been developed
assist in understanding atoms.
   a. All matter is made up of atoms.
   b. The atomic model has an internal structu
   consisting of protons and neutrons formi
   a central core or nucleus, and an out
   structure of electrons.
   c. The various kinds of atoms are called e
   ments.
2. A relationship exists between atoms and m
ecules.
   — Atoms can exist individually or in combi
   tion with other atoms of the same or diff
   ent elements, and therefore, are the buildi
   blocks of molecules.
3. A relationship exists among elements, co
pounds and mixtures.
4. Matter and energy are interrelated. The to
amount of energy and matter in the univer
remains constant.
   a. Matter is split apart to release energy
   fission reactions.
   b. Matter is combined to release energy in f
   sion reactions.

Energy is responsible for bringing about physical and/or chemical changes in the forms and behavior of matter.

1. There is a difference between physical and chemical changes.
   a. In a physical change, one or more of the properties of a substance are altered but not its composition or identity.
      — A change of state represents one of the most common physical changes.
      — Changes in molecular motion and inter-molecular distances and forces of attraction account for physical changes.
   b. In a chemical change, atoms are rearranged resulting in new substances with new properties.
      — Most chemical changes require a great deal more energy than do physical changes.
   c. Some changes are reversible, some occur in cycles, some are irreversible.
2. There are several kinds of chemical changes or reactions.
3. Chemical reactions are usually accompanied by energy changes.
4. Rate of chemical reaction may be affected by temperature, concentration, surface area and catalysts.

MATHEMATICS

Objectives

The objectives for junior high school mathematics courses are:

1. To develop an understanding of mathematical concepts and an appreciation of mathematical structure.
2. To develop skill in the use of the fundamental processes.
3. To develop systematic methods of analyzing problems and of presenting their solutions.
4. To develop habits of precise thought and expression.
5. To develop an understanding of the significance and application of mathematics in the modern world.

Junior High School Mathematics Course Outlines

The list of topics indicates the program of studies in junior high school mathematics. While the list has been distributed through three years of study, it is not necessary to follow the yearly sequence of topics indicated. If departures from the sequence are made, coordination in the school should ensure that the complete program has been offered by the end of the junior high school period.

GRADE VII MATHEMATICS

Recommended Texts

Hanwell et al. *Contemporary Mathematics 1.* Holt, Rinehart and Winston, 1964.

Keedy et al. *Exploring Modern Mathematics.* Book I. Holt, Rinehart and Winston, 1965.

Van Engen et al. *Mathematics: Concepts and Applications.* First Course. Scott, Foresman & Co. (Gage), 1969.

Topics

A. *Sets*
   1. An understanding of the concepts of set and subset
   2. The ability to make appropriate use of set notation
   3. Knowledge of and ability to perform the operations of union and intersection.

B. *The Whole Number System*
   1. The position of whole numbers on the number line
   2. Ability to perform operations on the whole numbers
   3. Recognition and identification of the following properties of operations on the whole number system
      a) closure
      b) commutative
      c) associative
      d) distributive
   4. The properties of the identity elements
   5. Conventions for the order of operations in simplification of expressions

INDUSTRIAL EDUCATION

INTRODUCTION

Industrial Education has a unique place to fill in an education program that has as its objective the development of an informed citizenry in a highly industrialized society — a society that must learn to manage an industrial complex unknown before and to work in vocations not yet described. Industrial Education is a subject area the scope of which introduces students, both boys and girls, to all aspects of productive society.

OBJECTIVES

The following are the objectives of the Junior High School Industrial Education courses:

A. Personal Growth

1. To provide opportunities for the individual growth of the student through the development of acceptable personal and social values necessary in a productive society.
2. To provide a technical environment which motivates and stimulates individuals to discover their interests and develop personal and social responsibilities.
3. To assist in the development of positive attitudes towards safety.
4. To assist in the development of positive attitudes towards conservation and ecology.
5. To assist in the development of consumer values.
6. To assist in the development of positive attitudes towards the dignity of work.
7. To assist in the development of good work habits.
8. To foster the development of vocational interests and skills.

B. Career Exploration

To provide students with experiences which will assist them in making realistic career choices.

1. To provide students an opportunity, within a technical environment, to become acquainted with the general occupational characteristics of a variety of career fields.
2. To relate their own interests, abilities, likes, dislikes, and values to several career fields.

C. Occupational Skills

To develop basic competencies, integrating cognitive and psychomotor skills related to families of occupations.

1. To provide safe exploratory experiences in the use of tools, energy, equipment and materials appropriate to various technologies prevalent in a productive society.
2. To develop an understanding of the interrelationships of various technologies.

3. To provide a technical environment which permits students to synthesize their accumulated knowledge in the solution of practical problems, and to assist students to develop habits that will be conducive to the establishment of a safe environment.

The guide will provide specific objectives for each of the fields of study. The use of behavioral objectives is recommended but such objectives have not been included. Each teacher should prepare a set of behavioral objectives in accordance with their interests and methods of approach to the work.

PROGRAM DESCRIPTION

A. Organization

The multiple activity program is an organizational device by means of which a variety of exploratory experiences can be presented with a minimum of room and equipment. The laboratory is organized into a number of different sections representing the fields of study. Each section or bay is large enough to accommodate 4 to 6 students. These bays are as self-contained as possible with provisions made for the storage of tools, products and stock within them. The class is divided into three or more groups with each group working through the course unit in the assigned bay. After the completion of the unit in from nine to twelve weeks the groups rotate, each proceeding to another bay and to new experiences.

As the units consist of from nine to twelve weeks of work, depending on the number of areas in operation, there will be several weeks unaccounted for. This time, two to four weeks, could be used at the beginning of the year to organize the activities of the groups, plan the first product for an area, teach the beginning lessons of each unit, give demonstrations, and provide the information required to get each group started efficiently in their assigned unit.

Poor management and lack of planning are bound to result in confusion. Therefore, the teacher must have a well devised plan before attempting to operate a multiple activity laboratory.

B. Fields of Study

To provide for a breadth of exploratory experiences, the junior high school industrial education program is divided into four fields of study which are further sub-divided into sixteen modules. Each module represents fifteen to twenty-five hours of study. The minimum number of modules studied in one year is three. During the junior high school years it is recommended that a student study a minimum of three *different* modules each year. In junior high schools where Industrial Education is taught for two years, it is recommended that four *different* modules per year should be studied.

Fields of Study	Modules
Power Technology	Power Mechanics Electricity Electronics-Computer
Materials Technology	Earths Lapidary-Art Metals Leather-Textiles Metals Plastics Woods
Visual Communication	Graphics Photography-Drafting
Synthesizing	Consumerism Construction Manufacturing Student Contracting Developmental Research

In addition to the four fields outlined, the junior high school industrial education program includes a testing area and an instructional materials center. The testing area utilizes the materials and some of the products made in the other areas. The instructional materials center is used as a students' resource room, conference room and research area. *The Developmental Research Unit* is to be used for teacher research into *new* content only. The teacher must define the content of this unit and obtain the approval of the Provincial Consultant of Industrial Education and his principal before introducing it to the students.

C. Length of Program

The recommended time is from 4800 - 7000 minutes per year or 120-175 minutes per week in two blocks of time.

D. Scope of Program

The scope of the industrial education program includes the major technologies and all students, both boys and girls, should have the opportunity to explore the fields.

E. Safety

Each industrial education laboratory must have an effective safety program. This does not mean that the promulgation of a set of rules and regulations will satisfy this end. Students must be taught in each and every subject studied within the industrial education framework, the "hows and whys" inherent in the safety program. It is the responsibility of the teacher to supply continuous and vigilant supervision and to ensure that all students engage in only safe laboratory practices.

REFERENCES

No single textbook is prescribed. References for each module are listed in the course Guide.

CONTENT

Power Technology

Module 1. Electricity
— sources, circuitry, control, magnetism, utilization, appliance maintenance, guidance.

Module 2. Electronics Computer
— component functions, electronic sound generation, wireless transmission, computer, radio, phonograph/public address system, guidance.

Module 3. Power Mechanics
— small gas engines, small gas engine tune-up, CO_2 powered car, model rocketry, fluid power, mechanical power, guidance.

Materials Technology

Module 1. Earths Technology
— sources of ceramic and concrete materials, processes, societal implications, guidance.

Module 2. Lapidary and Art Metals Technology
— sources of material, processes, societal implications, guidance.

Module 3. Leather and Textiles Technology
— sources of materials, processes, societal implications, product planning, guidance.

Module 4. Metals Technology
— sources of materials, processes, societal implications, properties, product planning, guidance.

Module 5. Plastics Technology
— sources of materials, processes, societal implications, properties, product planning, guidance.

Module 6. Woods Technology
— sources of materials, processes, properties, societal implications, product planning, guidance.

Visual Communications

Module 1. Graphics
— offset, photo-offset, platen press, rubber stamp (optional), sign press, silk screen, photo silk screen.

Module 2. Photography/Drafting
— audio-visual production, camera, darkroom, advanced darkroom, freehand sketchings, instrument drawing.

Synthesizing Modules

Module 1. Construction
— pre-construction planning, preparation for construction, framing, utilities installation, finishing, transferring ownership, occupational information.

Module 2. Industrial Simulation
— history, production systems, systems of ownership, department organization, occupational information.

Module 3. Consumerism Module
— packaging, advertising, marketing, accounting, personnel training, occupational information.

Module 4. Student Contracting

Module 5. Developmental Research

LANGUAGES OTHER THAN ENGLISH

INTRODUCTORY STATEMENT

A language other than English may be implemented in the junior high school grades, either as a Group A option or as a Group B option. As a Group B option, it should respect the principles underlying this classification as outlined in the *Junior-Senior High School Handbook*. The implementation of a Group B option will vary from school to school dependent upon the personnel and material resources available.

However, when offered to interested students as a Group A option, its effectiveness in achieving significant proficiency in language learning by these students will depend upon, among other factors, the provision of ample time, frequently scheduled instructional periods and planned articulation. A sequential program, beginning at either the elementary school or at the junior high school and continuing on to senior high school, is a prerequisite to any real proficiency in the language studied.

For students in Alberta schools, progress in language development is suggested for each of three LEVELS of language acquisition. A LEVEL of language proficiency is defined as a set of behaviors which includes knowledge of language content and performance in terms of linguistic and attitudinal change. Although a LEVEL may be equated in a general way with a "year" or "years" of learning, or even with "grades", the term, as used in the PROGRAM OF STUDIES, indicates a student's level of linguistic development rather than his year of study or grade placement.

LEVEL ONE is defined as an *initial* learning experience in a second language. Students may complete LEVEL ONE or more at the end of a three-year junior high program or its equivalent. Students who begin their study of a second language in senior high school are expected to complete LEVEL ONE at the end of one year of language study. Students who have studied a language for one year only in senior high school, however, cannot be expected to have attained the same degree of fluency as students who have been exposed to the language for longer periods of time in the junior high school.

LEVEL TWO is defined as an *intermediate* learning experience in a second language. Students will normally complete LEVEL TWO at the end of two sequential years of senior high school study following the successful completion of LEVEL ONE.

LEVEL THREE then becomes an *advanced* learning experience in which students are encouraged to increase their language proficiency and cultural understanding. Students will pursue the study of a second language at this LEVEL after successfully completing LEVEL TWO.

Curriculum guides have been prepared for French, German and Ukrainian, in order to help school systems which choose to offer a second language in the junior high grades to plan a sequential program of learning activities. The curriculum outlines in these documents suggest language content and expected linguistic and attitudinal behaviors for each LEVEL of language learning.

Students who have successfully completed a second language program in the junior high school should be placed in a senior high school program which takes into account both achievement and the amount of time during which the

Suggested Expectations For Ukrainian At The End of Level One

The curricular outline included on pages 4 - 15 of the curriculum guide* identifies the language content to which students will be exposed during LEVEL ONE, and it suggests the linguistic and attitudinal behaviours expected of students at the end of this level of language learning.

LEVEL ONE is considered to be an *intial* experience in learning the Ukrainian language and it may occur at any grade(s) of the student's career in the secondary school. The attainment of LEVEL ONE proficiency may occur in a variety of ways, such as the successful completion of:

a. a three-year program in the junior high school,
b. a two-year program in the junior high school, equivalent in time exposure to three years of study,
c. a one-year program in the senior high school, during which students learn the concepts and develop the skills and attitudes suggested for LEVEL ONE.

The successful completion of LEVEL ONE by a student should result in his subsequent placement in a LEVEL TWO program, i.e. Ukrainian 20.

*_Ukrainian as a Second Language_, Tentative Curriculum Guide, Levels 1, 2 and 3 (Secondary) 1974.

RECOMMENDED INSTRUCTIONAL MATERIALS

The language content, along with the linguistic and attitudinal behaviors outlined in LEVEL ONE in each of the curriculum guides for French, German and Ukrainian contain the basic core suggested for an initial program in these languages. Teachers are advised to examine the instructional materials and select structures, concepts and expressions which correspond to the Program of Studies and curriculum guides. As lessons vary in substance, it is important to avoid a materials-centered, page by page, lesson by lesson coverage.

The following instructional materials are recommended for the junior high school portion of a six-year program beginning in Grade 7.

FRENCH AS A SECOND LANGUAGE

* A-LM Level One (Revised Edition)

or

* Ecouter et Parler (Revised Edition, 1970)

or

Le Français International, deuxième version (Books 1, 2 and 3)

or

* Voix et Images de France

GERMAN AS A SECOND LANGUAGE

A-LM Level One (Second Edition)

or

Verstehen und Sprechen (1970)

UKRAINIAN AS A SECOND LANGUAGE

Ukrainian by the Audio-Visual Method

ADDITIONAL RESOURCES

In order to encourage students to meet the expectations suggested for LEVEL ONE, teachers are invited to select and adapt from the instructional materials listed above, and to provide for a wide variety of supplementary resource materials. A selection of resource materials for French, German and Ukrainian has been identified in the following publications.

Resource Materials — A Listing Prepared for Teachers of French as a Second Language (Secondary) 1974.

Resource Materials — A Listing Prepared for Teachers of German as a Second Language (Secondary) 1974.

Resource Materials — A Listing Prepared for Teachers of Ukrainian as a Second Language (Secondary) 1975.

* Please note that A-LM French, Ecouter et Parler, and Voix et Images de France will be phased out in three years.

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